STOCK ASSESSMENT AND FISHERY EVALUATION (SAFE) REPORT FOR

ATLANTIC HIGHLY MIGRATORY SPECIES

2009

DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service

Stock Assessment and Fishery Evaluation (SAFE) Report for

Atlantic Highly Migratory Species
2009

Highly Migratory Species Management Division
Office of Sustainable Fisheries
National Marine Fisheries Service
1315 East-West Highway
Silver Spring, Maryland 20910

CONTACT INFORMATION

Documentation Requests:

This document is available at the following internet address: http://www.nmfs.noaa.gov/sfa/hms/hmsdocument_files/SAFEreports.htm. All documents cited in the SAFE report, as well as additional hard copies of the report, are available from the following address:

Highly Migratory Species Management Division
NMFS/NOAA
1315 East-West Highway
National Marine Fisheries Service
Silver Spring, MD 20910
Phone: (301) 713-2347
Fax: (301) 713-1917

Dealer Permits:

Tuna dealer permits are issued out of the Northeast Regional Office of NOAA Fisheries (978-281-9370), shark and swordfish dealer permits are issued out of the NOAA Fisheries Southeast Regional Office (727-824-5326).

Charter/Headboat Permits, Atlantic Tuna Permits & Recreational HMS Vessel Permits:

Charter/Headboat Permits, Atlantic Tuna Permits & Recreational HMS Vessel Permits are issued via the internet (www.hmspermits.gov) or through a toll free automated telephone system (1-888-872-8862). Questions regarding these permits should be directed to Customer Service at 1-888-872-8862, Monday through Friday, from 8 a.m. to 5 p.m. Eastern Time. Fishermen may also listen to or view updates to the regulations via this toll-free automated telephone system or at the website listed above.

Atlantic Shark, Swordfish, and Tuna Longline Permits:

Questions regarding renewals or transfers of shark, swordfish, and tuna longline limited access permits should be directed to the NOAA Fisheries Southeast Regional Office (727-824-5326).

Table of Contents

List of Tables

List of Figures

EXECUTIVE SUMMARY

The National Marine Fisheries Service (NMFS), Highly Migratory Species (HMS) Management Division announces the availability of the 2009 Stock Assessment and Fishery Evaluation (SAFE) Report. The SAFE Report contains a review of the current status of Atlantic HMS stocks (tunas, swordfish, billfish, and sharks), describes the year's accomplishments in managing Atlantic HMS, and provides an assessment of short-term future management of Atlantic HMS. The SAFE Report provides Atlantic HMS fishery constituents information on the latest developments in Atlantic HMS management as well as fulfilling Magnuson-Stevens Act requirements.

In 2009 the HMS Management Division completed numerous management actions including Final Amendment 1 for Essential Fish Habitat and Draft Amendment 3 relating to small coastal sharks (SCS), pelagic sharks, and smooth dogfish. In addition, the HMS Division continued working on Amendment 4 relating to Caribbean issues, a bluefin tuna regulatory amendment, and an Advance Notice of Proposed Rulemaking (ANPR) to examine options to more thoroughly utilize the available BFT and swordfish quotas. As described more thoroughly in Chapter 1, the HMS Management Division also implemented annual quota specifications for Atlantic tunas and swordfish, completed several inseason management actions, and participated in the International Commission for Conservation of Atlantic Tunas (ICCAT) negotiations to ensure U.S. interests were well represented. NMFS participated in the Convention on International Trade in Endangered Species (CITES) discussions regarding potential listing of Atlantic bluefin under Appendix 1 and several shark species under Appendix 2.

A few structural modifications were made to this year's SAFE Report to reduce duplication and increase readability.

1) Much of the redundancy found in previous SAFE Reports, regarding bycatch in Chapters 4 (Fishery Data Update) and Chapter 8 (Bycatch, Incidental Catch, and Protected Species), has been removed.
2) In previous SAFE Reports, Chapter 7 was devoted to international trade, which has now been incorporated into Chapter 5 (Economic Status of HMS Fisheries).
3) Chapter 4 previously included lengthy descriptions of status of the stocks, which were largely derived from other documents such as ICCAT Standing Committee on Research and Statistics (SCRS) documents, the U.S. National Report, and Southeast Data Assessment and Review (SEDAR) documents. Rather than duplicating that information, that discussion has been replaced with links and references to the source documents.
4) Safety Issues, which were previously covered in Chapter 4 at the end of each gear section, have been consolidated into a single section in Chapter 4 (Section 4.9 Safety Issues).

Feedback and comments on this SAFE Report are encouraged and should be sent to the HMS Management Division, 1315 East West Highway, Silver Spring, MD 20910, phone: 301 713-2347, fax: 301 713-1917.

1.0 INTRODUCTION

The Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) is the primary Federal legislation governing the management and executive processes for marine fisheries of the United States. The National Standard (NS) 2 guidelines (50 CFR 600.315) require the National Marine Fisheries Service (NMFS) to prepare a Stock Assessment and Fishery Evaluation (SAFE) Report, or similar document, review it annually, and make changes as necessary for each fishery management plan (FMP). This document constitutes the 2009 SAFE Report for Atlantic highly migratory species (HMS) managed under the 2006 Consolidated HMS Fishery Management Plan (FMP).

Consistent with the NS 2 guidelines, this 2009 SAFE Report provides a summary of the best available scientific information on the condition of HMS stocks, marine ecosystems, and fisheries managed under Federal regulation. It also provides updated information regarding the economic status of HMS fisheries, fishing communities, and industries, as well as the socio-economic and environmental impacts of recently implemented regulations. This information evaluates the effectiveness of federal and state Atlantic HMS management programs, and provides a basis for future management decisions.

This document is one method utilized by NMFS to introduce new information, identify potential new management issues, and begin a preliminary assessment and evaluation of fishery regulations. This SAFE Report includes the latest stock assessment data, recommendations, and resolutions from the International Commission for the Conservation of Atlantic Tunas (ICCAT) and its Standing Committee on Research and Statistics (SCRS). The report also includes the latest domestic shark assessment information. In compliance with the NS 2 guidelines, the report presents a comprehensive summary of the most recent Atlantic HMS fisheries-related data from a variety of sources across a wide range of disciplines.

1.1 Summary and Update on HMS Management Division Activities and Regulatory Actions In 2009

Table 1.1 provides a list of most of the abbreviations and acronyms that are used in this document or that are commonly used in fisheries management.

From January 1 through December 2009, NMFS enacted or proposed a number of actions with regard to Atlantic HMS. All such actions published in the Federal Register during that timeframe are listed in Table 1.2. Most documents related to these actions can be found on the Atlantic HMS webpage at http://www.nmfs.noaa.gov/sfa/hms/. Actions taken before January 1, 2009, are noted in similar tables in previous SAFE reports. A summary of the actions listed in the table is presented below.

NMFS held HMS Advisory Panel meetings February 18 - 19, 2009, and September 9 - 11, 2009, in Silver Spring, MD (Nov. 13, 2008, 73 FR 67135; Aug. 5,

2009, 74 FR 39063, respectively). These meetings provided valuable comments on a suite of management actions that NMFS pursued or considered in 2009. Summaries of these discussions and comments can be found on the HMS website at: http://www.nmfs.noaa.gov/sfa/hms/, along with the meeting transcripts. These documents are also available by calling the HMS Management Division at 301-713-2347.

On June 1, 2009, NMFS released an Advance Notice of Proposed Rulemaking (ANPR) (74 FR 26174). The ANPR requested public comment on potential adjustments to the regulations primarily governing the U.S. Atlantic tuna and bluefin tuna, and North Atlantic swordfish to enable more thorough utilization of the available bluefin tuna and Swordfish quotas. Some management measures that were included in the ANPR were included in the proposed rule to adjust the Atlantic bluefin tuna regulations (Nov. 4, 2009, 74 FR 57218). NMFS is considering future course of actions for the remaining management measures. Any proposed actions must balance efforts to end overfishing of, and rebuild bluefin tuna while providing an opportunity to harvest the U.S. quota and revitalize the swordfish fishery.

On June 12, 2009, NMFS published the Notice of Availability for Final Amendment 1 to the Consolidated HMS FMP for Essential Fish Habitat (EFH) (74 FR 28018). The amendment updated EFH for Atlantic HMS including designation of a new Habitat Area of Particular Concern (HAPC) for bluefin tuna in the Gulf of Mexico. The amendment also analyzed potential fishing impacts on EFH and concluded that HMS gears were not having more than a minimal and temporary effect on EFH. As a result, no management measures were proposed to minimize fishing impacts.

On July 24, 2009, NMFS published a proposed rule for Draft Amendment 3 to the Consolidated HMS FMP (74 FR 36892) for small coastal sharks (SCS), pelagic sharks, and smooth dogfish. The proposed rule and amendment would implement measures to rebuild blacknose sharks, prevent overfishing of shortfin mako and blacknose sharks, and implement management measures for smooth dogfish. On August 10, 2009, NMFS extended the comment period until September 25, 2009 (74 FR 39914). Since annual catch limits (ACLs) and accountability measures (AMs) need to be implemented for all overfished stocks by 2010, NMFS proposed a delay to the start of the small coastal shark (SCS) fishing season until the effective date of the final rule sometime in mid to late Spring 2010 (October 28, 2009, 74 FR 55526).

Besides FMP amendments, NMFS conducted other rulemakings relating to Atlantic HMS. In April and June NMFS released the proposed and final annual swordfish specifications, respectively (April 7, 2009, 74 FR 15669; June 1, 2009, 74 FR 26174). In June, NMFS published notices closing the commercial non-sandbar large coastal shark fishery in the Gulf of Mexico (June 4, 2009, 74 FR 30479), and in the non-sandbar portion of the shark research fishery and Atlantic region (June 26, 2009, 74 FR 30479). The sandbar portion of the shark research fishery closed in October (October 6, 2009, 74 FR 51241). NMFS issued inseason retention limits for bluefin tuna in August (74 FR 44296), and in February, June, and September NMFS announced additional Atlantic shark identification and protected species safe handling, release, and

identification workshops (February. 27, 2009, 74 FR 8913; June 10, 2009, 74 FR 27506; September. 10, 2009, 74 FR 46572). On October 28, 2009, NMFS issued a proposed rule for the 2010 Shark Specifications (74 FR 55526), and on October 30, 2009, NMFS announced its intention to issue shark research fishery permits and requested applications (74 FR 56177). NMFS also requested nominations for the HMS Advisory Panel on October 26, 2009 (74 FR 54964). On November 23, 2009, NMFS announced its intent to issue exempted fishing permits, scientific research permits, display permits, and letters of acknowledgement (74 FR 61105).

NMFS also requested comments for several data collections, per the Paperwork Reduction Act (PRA), and announced the fall meetings of the Advisory Committee to the U.S. section of ICCAT.

While not specific to Atlantic HMS, NMFS has also released a number of rules to implement measures in the Magnuson-Stevens Act that could impact Atlantic HMS management. These rules include, but are not limited to, the Experimental Permitting Process, Exempted Fishing Permits, Scientific Research Activity (Aug. 25, 2009, 74 FR 42786), and improving implementation and of the PRA (Oct. 27, 2009, 74 FR 55269).

NMFS also coordinated with the U.S. Fish and Wildlife Service on a potential listing of Atlantic bluefin tuna under the Convention on International Trade in Endangered Species (CITES) (July 13, 2009, 74 FR 33460). On October 16, 2009, the U.S. Fish and Wildlife Service announced its intent to propose listing several species of shark including oceanic whitetip, scalloped, smooth, and great hammerheads, sandbar, and dusky shark under Appendix 2 of CITES (http://www.fws.gov/news/NewsReleases/showNews.cfm?newsId=5E734AB0-0D2D-583A-B91F88A91A07DD71.)

Atlantic White Marlin Genus Name Change to *Kajikia*

Section 3 of the Magnuson-Stevens Act defines HMS as "tuna species, marlin (*Teptrapturus* spp. and *Makaira* spp.), oceanic sharks, sailfishes (*Istiophorus* spp.), and swordfish (*Xiphias gladius*)." The genus name of Atlantic white marlin has been changed from *Tetrapturus* to *Kajikia* and the Integrated Taxonomic Information System, of which NOAA is a partner, and the American Fisheries Society have embraced this name change. NMFS has adopted the genus name change for white marlin with no effect on the management of Atlantic white marlin.

Table 1.1 List of Commonly Used Fishery Management Abbreviations, Acronyms, and Initials.

AA	Assistant Administrator for Fisheries
ABC	Acceptable biological catch
ACCSP	Atlantic Coastal Cooperative Statistics Program
ACL	Annual catch limit
ACS	Angler consumer surplus
ACT	Annual catch target
AM	Accountability measure
ANPR	Advanced Notice of Proposed Rulemaking
AOCTRP	Atlantic Offshore Cetacean Take Reduction Plan
AOCTRT	Atlantic Offshore Cetacean Take Reduction Team
AP	Advisory Panel
APA	Administrative Procedure Act
ASMFC	Atlantic States Marine Fisheries Commission
ATCA	Atlantic Tunas Convention Act
B	Biomass
BAYS	Bigeye, albacore, yellowfin, skipjack tunas
BiOp	Biological Opinion
B_{MSY}	Biomass expected to yield maximum sustainable yield
B_{OY}	Biomass expected to yield optimum yield
CAR	Caribbean
CFMC	Caribbean Fishery Management Council
CFL	Curved fork length
CFR	Code of Federal Regulations
CHB	Charter/Headboat
CIE	Center for Independent Experts
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CPUE	Catch per unit effort
CSFOP	Commercial shark fishery observer program
CZMA	Coastal Zone Management Act

DEIS	Draft Environmental Impact Statement
DPS	Distinct population segment
dw	Dressed weight
EA	Environmental Assessment
EEZ	Exclusive economic zone
EFH	Essential fish habitat
EFP	Exempted fishing permit
EIS	Environmental Impact Statement
EO	Executive Order
ESA	Endangered Species Act
F	Instantaneous fishing mortality
FAD	Fish aggregating device
FAO	Food and Agriculture Organization
FEC	Florida East Coast
FEIS	Final Environmental Impact Statement
FL	Fork Length
FMP	Fishery Management Plan
F_{MSY}	Instantaneous fishing mortality rate expected to yield maximum sustainable yield
FMU	Fishery management unit
F_{OY}	Fishing mortality rate expected to yield optimum yield
FR	Federal Register
FRFA	Final regulatory flexibility analysis
GOM	Gulf of Mexico
GSAFF	Gulf and South Atlantic Fishery Foundation
GMFMC or GOMFMC	Gulf of Mexico Fishery Management Council
GSMFC	Gulf States Marine Fisheries Commission
HAPC	Habitat area of particular concern
HMS	Highly migratory species: Atlantic sharks, tunas, swordfish, and billfish
HMS FMP	Consolidated Highly Migratory Species Fishery Management Plan
ICCAT	International Commission for the Conservation of Atlantic Tunas
IPOA	International Plan of Action

IRFA	Initial regulatory flexibility analysis
ITP	International trade permit
ITQ	Individual transferable quota
ITS	Incidental take statement
IUU	Illegal, unreported, unregulated
LAP	Limited access permit
LCS	Large coastal sharks
LOA	Letter of acknowledgment
LPS	Large Pelagic Survey
LWTRP	Large Whale Take Reduction Plan
LWTRT	Large Whale Take Reduction Team
MAB	Mid Atlantic Bight
MAFMC	Mid-Atlantic Fishery Management Council
Magnuson-Stevens Act	Magnuson-Stevens Fishery Conservation and Management Act
MFMT	Maximum fishing mortality threshold
MMPA	Marine Mammal Protection Act
MPA	Marine protected area
MRFSS	Marine Recreational Fishing Statistics Survey
MSST	Minimum stock size threshold
MSY	Maximum sustainable yield
mt	Metric tons
NCA	North Central Atlantic
NEC	Northeast Coastal
NED	Northeast Distant Waters
NEFMC	New England Fishery Management Council
NEFSC	Northeast Fisheries Science Center
NEPA	National Environmental Policy Act
NERO	Northeast Regional Office
NGO	Non-governmental organization
nmi	Nautical mile
NOA	Notice of Availability
NMFS	National Marine Fisheries Service

NOAA	National Oceanographic and Atmospheric Administration
NOI	Notice of Intent
NPOA	National Plan of Action
NS	National Standards
NWGB	National Working Group on Bycatch
OSF	Office of Sustainable Fisheries
OY	Optimum yield
PLL	Pelagic longline
POP	Pelagic observer program
OPR	Office of Protected Resources
PRA	Paperwork Reduction Act
Reg Flex Act	Regulatory Flexibility Act
RFMO	Regional Fishery Management Organization
RIR	Regulatory Impact Review
RPAs	Reasonable and Prudent Alternatives
RPMs	Reasonable and Prudent Measures
SAB	South Atlantic Bight
SAFE Report	Stock Assessment and Fishery Evaluation report
SAFMC	South Atlantic Fishery Management Council
SAR	Sargasso
SBRM	Standardized bycatch reporting methodology
SCRS	Standing Committee for Research and Statistics
SCS	Small coastal sharks
SDC	Status determination criteria
SEFSC	Southeast Fisheries Science Center
SEIS	Supplemental environmental impact statement
SERO	Southeast Regional Office
SEW	Stock evaluation workshop
SFA	Sustainable Fisheries Act
SFL	Straight fork length
SK Program	Saltonstall-Kennedy Program
SRP	Scientific research permit
SSB	Spawning stock biomass

TAC	Total allowable catch
TAL	Total allowable landings
TCs	Terms and Conditions
TL	Total length
TUN	Tuna North
TUS	Tuna South
USCG	United States Coast Guard
USFWS	United States Fish and Wildlife Service
VMS	Vessel monitoring system
VTR	Vessel trip report
WTP	Willingness to pay
ww	Whole weight

Table 1.2 Summary of NMFS' Atlantic HMS Fisheries Actions as of December 02, 2009.

Action Type NMFS ID#	50 CFR Part	Action Description	Publication Info
Proposed Rule RIN 0648-AX12	635	2009 Atlantic Bluefin Tuna Quota Specifications and Effort Controls	Feb. 18, 2009 74 FR 7577
Notice RIN 0648-XN27	NA	Notice of Atlantic Shark Identification and Protected Species Safe Handling, Release, and Identification Workshops	Feb. 27, 2009 74 FR 8913
Final Rule RIN 0648-AW61	635	Atlantic Swordfish Quotas	April 7, 2009 74 FR 15669
Final Rule RIN 0648-AV65	229	Pelagic Longline Take Reduction Plan	May 19, 2009 74 FR 23349
Final Rule RIN 0648-AX12	635	2009 Atlantic Bluefin Tuna Quota Specifications and Effort Controls	June 1, 2009 74 FR 26110
ANPR RIN 0648-AX85	635	Atlantic Bluefin Tuna and Swordfish Management Measures and HMS Permit Requirements	June 1, 2009 74 FR 26174
Fishery Closure RIN 0648-XP47	635	Inseason Action to Close the Commercial Gulf of Mexico Non-Sandbar Large Coastal Shark Fishery	June 4, 2009 74 FR26803
Notice RIN 0648-XP24	NA	Notice of Atlantic Shark Identification and Protected Species Safe Handling, Release, and Identification Workshops	June 10, 2009 74 FR 27506
Notice RIN 0648-AV00	NA	Notice of Availability of Final Environmental Impact Statement and Fishery Management Plan Amendment for Essential Fish Habitat	June 12, 2009 74 FR 28018
Notice RIN 0648-XN11	NA	Notification of Determination Overfishing and Approaching an Overfished Condition for Shortfin Mako Shark	June 19, 2009 74 FR 29185
Fishery Closure RIN 0648-XP91	635	Inseason Action to Close the Commercial Non–Sandbar Large Coastal Shark Fisheries in the Shark Research Fishery and Atlantic Region	June 26, 2009 74 FR 30479
Proposed Rule RIN 0648-AW65	229, 600, 635	Atlantic Shark Management Measures; Amendment 3	July 24, 2009 74 FR 36892
Proposed Rule RIN 0648-AX07	300, 635	North and South Atlantic Swordfish Quotas	Aug. 5, 2009 74 FR 39032

Action Type NMFS ID#	50 CFR Part	Action Description	Publication Info
Notice RIN 0648-XP99	NA	Meeting of the HMS Advisory Panel	Aug. 5, 2009 74 FR 39063
Notice RIN 0648-AW65	229, 600, and 635	Proposed Rule; Extension of Comment Period for Atlantic Shark Management Measures; Amendment 3	Aug. 10, 2009 74 FR 39914
Temporary Rule RIN 0648-XQ90	635	Atlantic Bluefin Tuna Fisheries; inseason retention limit adjustment.	Aug. 28, 2009 74 FR 44296
Notice RIN 0648-XQ84	635	Notice of Atlantic Shark Identification and Protected Species Safe Handling, Release, and Identification Workshops	Sept. 10, 2009 74 FR 46572
Fishery Closure RIN 0648-XR10	635	Inseason Action to Close the Commercial Sandbar Shark Research Fishery	Oct. 6, 2009 74 FR 51241
Inseason Action RIN 0648-XS22	635	Inseason Action; Notification of Applicable Longline Category Incidental Retention Limits	Oct. 20, 2009 74 FR 53671
Notice	NA	Atlantic Highly Migratory Species; Advisory Panel; Request for nominations	Oct. 26, 2009 74 FR 54964
Proposed Rule RIN 0648-AX95	635	Atlantic Commercial Shark Management Measures	Oct. 28, 2009 74 FR 55526
Notice of Intent RIN 0648-XQ61	635	Atlantic Shark Management Measures; 2010 Research Fishery	Oct. 30, 2009 74 FR 56177
Proposed Rule RIN 0648-AX85	635	Atlantic Bluefin Tuna Season and Retention Limit Adjustment	Nov. 4, 2009 74 FR 57128
Notice of Intent RIN 0648-X85	635	Exempt Fishing, Scientific Research, Scientific Research, Display, and Chartering Permits; Letters of Acknowledgment	Nov. 23, 2009 74 FR 61105
Proposed Rule RIN 0648-XQ38	635	2010 Atlantic Bluefin Tuna Quota Specifications	Dec. 2, 2009 74 FR 63095

1.2 2009 Accomplishments of the International Commission for the Conservation of Atlantic Tunas (ICCAT)

ICCAT is an international regional fishery management organization (RFMO) with 48 members, including the United States. The 21st Regular Meeting of ICCAT was held in Recife, Brazil, November 6-15, 2009. It was preceded by the first meeting of the Commission's Working Group on Sport and Recreational Fishing and two days of Compliance Committee meetings. The United States helped develop recommendations

aimed at promoting the conservation, management, and rebuilding of Atlantic highly migratory fish stocks (*e.g.*, tunas, swordfish, sharks), including those critical to U.S. fishermen. ICCAT made progress on a number of issues, including compliance issues and action to address the decline of eastern Atlantic bluefin tuna. Dr. Christopher Rogers, of the United States, was reelected for a two year term as Chairman of the Commission's Compliance Committee.

North Atlantic Swordfish: In 2009, ICCAT adopted recommendation 09-02, which reduced the total allowable catch (TAC) from 14,000 mt to 13,700 mt, in line with scientific advice. With the exception of this reduction in the TAC, the measure essentially extends recommendation 06-02 through 2010. The measure continues the United States' allocation of 3,907 mt, and continues carry forward caps for Contracting Parties, Co-operating Non-Contracting Parties, Entities or Fishing Entities (CPCs). The maximum underharvest that a CPC may carry over cannot exceed 50 percent of its quota allocation, which is 1,953.5 mt for the United States under the current allocation scheme. Furthermore, it extended a clause that allows CPCs with a TAC allocation to make a one-time transfer within a fishing year of up to 15 percent of its TAC allocation to other CPCs with TAC allocations. It also continues to allocate 1,345 mt of U.S. underharvest from the previous management period to the TAC for the next management period in an effort to accommodate interest expressed by a number of developing CPCs to develop fisheries for North Atlantic swordfish. The Recommendation also extends a provision allowing the United States to harvest up to 200 mt of its annual catch limit between 5 degrees North latitude and 5 degrees South latitude, and a provision transferring 25 mt from the United States to Canada.

South Atlantic Swordfish: The Commission adopted Recommendation 09-03, which includes a TAC of 15,000 mt each year for the period 2010-2012, with an aggregate cap of 45,000 mt over the three year management period. A 2,000 mt reduction in the TAC (from 17,000 mt to 15,000 mt) was prorated for all parties based on allocations per Recommendation 06-03, with an exception for CPCs with quotas of 100 mt or less. The United States was allocated 100 mt annually with the ability to carry forward up to 100 mt each year. The Recommendation included limited transfer provisions from a number of CPCs to Namibia (50 mt), and from the United States to Cote d'Ivoire (25 mt) and Belize (25 mt).

Western Atlantic Bluefin Tuna: No new measures were adopted for Western Atlantic bluefin tuna in 2009. In 2008, Recommendation 08-04 was adopted setting the western Atlantic bluefin tuna TAC for 2009 and 2010 at 1900 mt and 1800 mt, respectively. These TACs represented a 10 percent and 14 percent reduction, respectively, from the 2008 TAC of 2100 mt and were intended to stop overfishing by 2010 with a 75 percent probability of success. The TACs also substantially increased the probability of rebuilding the stock by 2019, consistent with the 1998 rebuilding program. Another notable change between Recommendation 08-04 and Recommendation 06-06 was that the 10 percent tolerance for landings of western Atlantic bluefin tuna <115 cm (primarily the U.S. school fishery) is now to be managed over a two-year period (2009-2010) rather than a four-year period. Recommendation 08-04 also included provisions

for Mexico to transfer 73 mt of its accrued underharvest to Canada in 2009. For 2010, recommendation 08-04 specifies that Mexico will transfer accrued underage to Canada such that Canada's initial allocation is 480 mt. If Mexico has insufficient underharvest to keep Canada at 480 mt in 2010, the recommendation includes a provision for the United States to provide some underharvest to Canada, if available. Western Atlantic bluefin tuna quota allocations will be renegotiated in 2010.

Eastern Atlantic and Mediterranean Bluefin Tuna: The Commission adopted Recommendation 09-06, amending the recovery plan for Eastern Atlantic and Mediterranean bluefin tuna . Recommendation 09-06 reduced the TAC for Mediterranean bluefin tuna from a previously agreed to level of 22,000 mt for 2010 to 13,500 mt. The Commission also agreed to develop a recovery plan in 2010 that has not less than a 60 percent probability of achieving the Commission's management objective by the close of 2022. Recommendation 09-06 includes an 11 month closure of the Mediterranean purse seine fishery, with a one month opening from mid-May through mid-June. In addition, Recommendation 09-06 includes a provision providing for a suspension of fishing for Mediterranean bluefin tuna in 2011, if the SCRS stock assessment to be conducted in 2010 detects a serious threat of fishery collapse. Further additional measures on capacity reduction and joint fishing operations were also included.

Bigeye Tuna: The Commission adopted Recommendation 09-01, which reduced the TAC from 90,000 mt to 85,000 mt, in conformance with scientific recommendations. The Commission failed to implement an improved time and area closure to protect juvenile bigeye and yellowfin tunas in the Gulf of Guinea. Despite concerns expressed by the United States, a restriction limiting carry forward of underharvest to 30 percent of allocations was eliminated.

North and South Atlantic Albacore: The Commission adopted Recommendation 09-05, which established a rebuilding plan for Northern albacore tuna that included TACs for 2010 and 2011. The TAC was reduced from 30,200 mt to 28,000 mt in conformance with scientific advice and, notably, accounted for catches of minor harvesters. The United States' quota was reduced by 11 mt, or 2 percent, from 538 mt to 527 mt. A restriction limiting carry forward to no more than 25 percent of base allocations was retained.

Sharks: The Commission adopted Recommendation 09-08, prohibiting retention of bigeye thresher sharks in all fisheries, with one small exemption of 110 individual fish for Mexico to account for a small-scale coastal catch. Recommendation 09-08 also includes a requirement to submit Task I and Task II data for all other species of the *Alopias* family, and that the number of discards and releases of bigeye threshers must be recorded with an indication of status (dead or alive) and reported to ICCAT.

Trade related measures: No trade restrictive measures were adopted by the Commission at the 2009 meeting. However, modifications were made to the Bluefin Tuna Catch Document (BCD) program, primarily with regard to the implementing

guidelines for completing the BCD form. The Commission chose to issue the United States a letter of concern with regard to a minor implementation of the BCD program. In total, all but three ICCAT CPCs were issued either a letter of concern or letter of identification for various issues regarding compliance with ICCAT recommendations.

Record of Vessels: Recommendation 09-08, as adopted by the Commission, amended the record of large scale fishing vessels authorized to fish in the convention area by reducing the length of vessels which must be included in the record from 24 meters to 20 meters. A preliminary review of domestic records indicates that this change will roughly double the number of vessels submitted for inclusion in the record by the United States.

1.3 Existing State Regulations

Table 1.3 outlines the existing state regulations as of January 1, 2010, with regard to HMS species. While the HMS Management Division updates this table periodically throughout the year, persons interested in the current regulations for any state should contact that state directly.

The Atlantic States Marine Fisheries Commission (ASMFC) is composed of 15 member states along the Atlantic coast from Maine to Florida. The Gulf States Marine Fisheries Commission (GSFMC) is composed of five member states along the Gulf of Mexico from Florida to Texas. Through the Commissions, member states coordinate fisheries management measures to create consistent regulations and ensure stocks are protected across state boundaries. In August 2008, the ASMFC approved the Interstate Fishery Management Plan (FMP) for Atlantic Coastal Sharks. This FMP was modified via Coastal Sharks Addendum I in September 2009. The management measures for coastal shark species in the FMP and Addendum I are to be implemented by ASMFC member states by January 1, 2010. States can implement more restrictive management measures or can apply for *de minimus* status, as appropriate. The measures in the Interstate FMP for Coastal Sharks, as summarized from the ASMFC Coastal Shark FMP Executive Summary, include:

<u>Recreational Measures</u>:

1. Recreational anglers are prohibited from possessing silky, tiger, blacktip, spinner, bull, lemon, nurse, scalloped hammerhead, great hammerhead, and smooth hammerhead in the state waters of Virginia, Maryland, Delaware and New Jersey from May 15 through July 15—regardless of where the shark was caught
2. Recreational anglers are prohibited from possessing any shark species that is illegal to catch or land by recreational anglers in federal waters.
3. All sharks caught by recreational fishermen must have head, tail, and fins attached to the carcass.
4. Sharks caught in the recreational fishery must have a fork length of at least 4.5 feet with the exception of Atlantic sharpnose, blacknose, finetooth, bonnethead, and smooth dogfish.
5. Recreational anglers may only use handlines and rod and reel.

6. Each recreational shore-angler is allowed a maximum harvest of one shark from the federal recreationally permitted species, plus one additional bonnethead, and one additional Atlantic sharpnose, per calendar day. Recreational fishing vessels are allowed a maximum harvest of one shark from the federal recreationally permitted species plus one additional one bonnethead, and one Atlantic sharpnose, per trip, regardless of the number of people on board the vessel. Smooth dogfish do not count toward the retention limit.

Commercial Measures:

7. All commercial fishermen are prohibited from possessing silky, tiger, blacktip, spinner, bull, lemon, nurse, scalloped hammerhead, great hammerhead, and smooth hammerhead in the state waters of Virginia, Maryland, Delaware and New Jersey from May 15 through July 15.
8. States will close the fishery for any shark species when NMFS closes the fishery in federal waters.
9. States will implement possession limits as annually specified.
10. Commercial shark fishermen must hold a state commercial license or permit in order to commercially catch and sell sharks in state waters.
11. States may grant exemptions from the seasonal closure, quota, possession limit, size limit, gear restrictions, and prohibited species restrictions contained in this plan through a state display or research permit system.
12. A federal Commercial Shark Dealer Permit is required to buy and sell any shark caught in state waters.
13. Prohibits the use of any gear type other than rod and reel, handlines, small mesh gillnets, large mesh gillnets, trawl nets, shortlines, pound nets/fish traps, or weirs.
14. States must implement shortline and gillnet bycatch reduction measures
15. All sharks caught by commercial fishermen must have tails and fins attached naturally to the carcass through landing, except for smooth dogfish. Commercial fishermen may completely remove the fins of smooth dogfish from March through June of each year. If fins are removed, the total wet weight of the shark fins may not exceed 5 percent of the total dressed weight of smooth dogfish carcasses. From July through February each year, commercial fishermen may completely remove the head, tail, pectoral fins, pelvic (ventral) fins, anal fin, and second dorsal fin, but must keep the dorsal fin attached naturally to the carcass through landing.
16. A state can request permission to implement an alternative to any mandatory compliance measure only if that state can show to the Board's satisfaction that its alternative proposal will have the same conservation value as the measure contained in this management plan or any addenda prepared under Adaptive Management.

Table 1.3 State Rules and Regulations Pertaining to Atlantic HMS.

Please note that state regulations are subject to change. Please contact the appropriate state personnel to ensure that the regulations listed below remain current. X = Regulations in Effect; n = Regulation Repealed; FL = Fork Length; CL = Carcass Length; TL = Total Length; LJFL = Lower Jaw Fork Length; CFL = Curved Fork Length; DW = Dressed Weight; and SCS = Small Coastal Sharks; LCS = Large Coastal Sharks.

State	Species				Cite Reference	Regulatory Details	Contact Information
	Tuna	*Swords*	*Billfish*	*Sharks*			
ME	X			X	Tuna -ME Rev. Stat. Ann. tit. 12, " 6001, 6502, and 6551 Sharks - Code ME R. 13-188 ' 50.01(1) and 50.10	Tuna - Retention limit - 1 tuna/year - non resident special tuna permit holder; Unlawful to fish for tuna with gear other than harpoon or hook and line or possess tuna taken in unlawful manner; No minimum size limits Sharks - Regulations apply to spiny dogfish only	ME Department of Marine Resources George Lapointe Phone: 207/624-6553 Fax: 207/624-6024
NH	X		X	X	Tuna - FIS 603.10 (REPEALED) Billfish - FIS 603.13 Sharks - FIS 603.19 and 603.20	Billfish - Possession limit - 1 billfish/trip; Minimum size (LJFL) - Blue marlin - 99"; White marlin - 66"; Sailfish - 57"; May be taken by hook and line only; Unlawful to sell billfish Sharks - Regulations apply to coastal sharks, spiny and smooth dogfish; Prohibited sharks listed; Federal Dealer permit required for all shark dealers; Porbeagle sharks can only be landed in the recreational fishery	NH Fish and Game Douglas Grout Phone: 603/868-1095 Fax: 603/868-3305

State	Species				Cite Reference	Regulatory Details	Contact Information
	Tuna	*Swords*	*Billfish*	*Sharks*			
MA	X		X	X	Tuna - 322 CMR' 6.04 Billfish – (REPEALED) Sharks – 322 CMR 6.35 & 6.37 CMRs available online at http://www.mass.gov/dfwele/dmf/commercialfishing/cmr_index.htm	Tuna - Reference to ATCA and federal regulations Billfish – Repealed as of December 2005 Sharks - Regulations apply to coastal sharks, spiny and smooth dogfish	MA Division of Marine Fisheries Melanie Griffin Phone: 617/626-1528 Fax: 617/626-1509
RI				X	Sharks - RIMFC Regulations ' 7.15	Sharks - Regulations apply to spiny dogfish only	RI Department of Environment Management Brian Murphy Phone: 401/783-2304
CT				X	Dogfish – Regulations of Connecticut State Agencies § 26-159a-19	Sharks - Regulations apply to spiny dogfish only	CT Department of Environmental Protection David Simpson Phone: 860/434-6043 Fax: 860/434-6150

State	Species				Cite Reference	Regulatory Details	Contact Information
	Tuna	*Swords*	*Billfish*	*Sharks*			
NY			X	X	Billfish -NY Environmental Conservation ' 13-0339 (5) Sharks - NY Environmental Conservation ' 13-0338; State of New York Codes, Rules and Regulations (Section 40.1)	Billfish - Blue marlin, white marlin, sailfish, and longbill spearfish shall not be bought, sold or offered for sale; Striped marlin, black marlin, shortbill spearfish shall not be bought, sold or offered for sale **Sharks** - Shark finning prohibited; Reference to the federal regulations 50 CFR part 635; Prohibited sharks listed; In the process of adopting into regulation all measures of the ASMFC Interstate Fishery Management Plan for Atlantic Coastal Sharks (August 2008); It will be effective early 2010	NY Department of Environmental Conservation Phone: 631/444-0430 Fax: 631/444-0449
NJ				X	Sharks-NJ Administrative Code, Title 7. Department of Environmental Protection, NJAC 7:25-18.1 and 7:25-18.12(d)	Sharks - Commercial/Recreational: min size 48” TL or 23” from the origin of the first dorsal fin to pre-caudal pit; Possession limit - 2 fish/vessel or 2 fish per person if fishing from shore or a land based structure; Must hold federal permit to possess or sell more than 2 sharks; No sale during federal closures; Finning prohibited; Prohibited Species: basking, bigeye sand tiger, sand tiger, whale and white sharks	NJ Fish and Wildlife Hugh Carberry Phone: 609/748-2020 Fax: 609/748-2032

State	Species				Cite Reference	Regulatory Details	Contact Information
	Tuna	*Swords*	*Billfish*	*Sharks*			
DE			X	X	Billfish - DE Code Ann. tit. 7, ' 1310 Sharks - DE Code Regulations 3541	Billfish/Sharks - Reference to federal regulations for sharks; Prohibition on sale of Atlantic sailfish and blue/white/striped marlin Sharks – Reference to federal regulations for sharks; Recreational/Commercial: min size – 54” FL; Bag limit – 1 shark/vessel/trip; Shorebound anglers – 1 shark/person/day; 2 Atlantic sharpnose/vessel/trip with no min size; Prohibited Species: same as federal species; Prohibition against fins that aren’t naturally attached to the body	DE Division of Fish and Wildlife Craig Shirey Phone: 302/739-9914

State	Species				Cite Reference	Regulatory Details	Contact Information
	Tuna	*Swords*	*Billfish*	*Sharks*			
MD	X	X	X	X	Tuna - Code of Maryland Regulations 08.02.13.02 and 08.02.05.23 Swordfish - Code of Maryland Regulations 08.02.12.03 and 08.02.05.27 Billfish - Code of Maryland Regulations 08.02.12.03 and 08.02.05.26 Sharks - Code of Maryland Regulations 08.02.12.03 and 08.02.22.01-.04	Tuna - Reference to listing bluefin tuna as in need of conservation; Federal regulations used to control size and seasons and recreational catch required to be tagged Swordfish - Reference to listing swordfish as in need of conservation; Federal regulations used to control size and seasons and recreational catch required to be tagged Billfish (blue and white marlin and sailfish) - Reference to listing billfish as in need of conservation; Federal regulations control size and seasons and recreational catch required to be tagged Sharks – Reference to listing sharks of the order Squaliformes as in need of conservation; Adopted into regulation all measures of the ASMFC Interstate Fishery Management Plan for Atlantic Coastal Sharks (August 2008); It became effective March 23, 2009	MD Department of Natural Resources Harley Speir Phone: 410/260-8264

State	Species				Cite Reference	Regulatory Details	Contact Information
	Tuna	*Swords*	*Billfish*	*Sharks*			
VA			X	X	Billfish - 4 VA Administrative Code 20-350 Sharks - 4 VA Administrative Code 20-490	Billfish - Prohibition on sale of billfish Sharks – Recreational: bag limit – 1 LCS, SCS, or pelagic shark/vessel/day with a min size of less than 54” FL or 30” CL; 1 Atlantic sharpnose and bonnethead/person/day with no min size; No limits on rec harvest of smooth and spiny dogfish; Commercial: possession limit - 4000 lb dw/day, min size - 58" FL or 31" CL west of the COLREGS line and no min size limit east of the COLREGS line; Prohibitions: fillet at sea, finning, longlining, same prohibited shark species as federal regulations; and spiny dogfish commercial regulations	VA Marine Resources Commission Jack Travelstead Phone: 757/247-2247 Fax: 757/247-2020

State	Species				Cite Reference	Regulatory Details	Contact Information
	Tuna	*Swords*	*Billfish*	*Sharks*			
NC			X	X	Billfish -NC Administrative Code tit. 15A, r.3M.0507 Sharks -NC Administrative Code tit. 15A, r.3M.0505; Proclamation FF-38-2006	Billfish - Recreational possession limit - 1 blue or white marlin/vessel/trip; 1 sailfish/person/day; Minimum size - blue marlin - 99", white marlin - 66", sailfish - 63"; Unlawful to sell or offer for sale blue or white marlin and sailfish Sharks - Director may impose restrictions for size, seasons, areas, quantity, *etc*. via proclamation; Commercial: open seasons and species groups same as federal; 33 non-sandbar LCS retention limit; no retention of sandbar sharks; fins naturally attached to shark carcass; LL shall only be used to harvest LCS during open season, shall not exceed 500 yds or have more than 50 hooks; Recreational: LCS (54” FL min size) - no more than 1 shark/vessel/day or 1 shark/person/day, SCS (no min size) – no more than 1 finetooth or blacknose shark/vessel/day and no more than 1 Atlantic sharpnose and 1 bonnethead/person/day, pelagics (no min size) -1 shark/vessel/day; Same prohibited shark species as federal regulations	NC Division of Marine Fisheries Randy Gregory Phone: 252/726-7021 Fax: 252/726-0254

State	Species				Cite Reference	Regulatory Details	Contact Information
	Tuna	*Swords*	*Billfish*	*Sharks*			
SC	X	X	X	X	Tuna -SC Code Ann. ' 50-5-2730 Swords-SC Code Ann. 50-5-2730 Billfish - SC Code Ann. ' 50-5-1700, 50-5-1705 Sharks -SC Code Ann. ' 50-5-2730	Tuna - Reference to ATCA and MSA regulations for tuna Swords- Unlawful to sell recreational catch, hook and line and hand lines only; 1/person/day, 4/vessel per trip, 47" LJFL Billfish - Unlawful to sell billfish; Hook and line gear only; Unlawful to possess while transporting gillnets, seines, or other commercial gear Sharks – Recreational: 2 Atlantic sharpnose/per/day and 1 bonnethead/person/day, no min size; All others – 1 shark/boat/trip, min size – 54" FL; Gill nets are prohibited in State waters; Reference to federal commercial regulations and prohibited species	SC Department of Natural Resources Wallace Jenkins Phone: 843/953-9835 Fax: 843/953-9386

State	Species				Cite Reference	Regulatory Details	Contact Information
	Tuna	*Swords*	*Billfish*	*Sharks*			
GA			X	X	Gear Restrictions/Prohibitions - GA Code Ann. ' 27-4-7; Billfish - GA Code Ann. ' 27-4-130.2; GA Comp. R. & Regs. ' 391-2-4-.04 Sharks - GA Code Ann. ' 27-4-130.1; OCGA ' 27-4-7(b); GA Comp. R. & Regs. ' 391-2-4-.04	Gear Restrictions/Prohibitions - Use of gillnets and longlines is prohibited in state waters Billfish - Possession prohibited in state waters, except for catch and release Sharks – Commercial/Recreational: 1 shark from the Small Shark Composite (bonnethead, sharpnose, and spiny dogfish, min size 30” FL; All other sharks - 1 shark/person or boat, whichever is less, min size 54” FL, Prohibited Species: sand tiger sharks, sandbar, silky, bigeye sandtiger, whale, basking, white, dusky, bignose, Galapagos, night, reef, narrowtooth, Caribbean sharpnose, smalltail, Atlantic angel, longfin mako, bigeye thresher, sharpnose sevengill, bluntnose sixgill, and bigeye sixgill; All species must be landed head and fins intact; Sharks may not be landed in Georgia if harvested using gill nets	GA Department of Natural Resources Carolyn Belcher Phone: 912/264-7218 Fax: 912/262-3143

State	Species				Cite Reference	Regulatory Details	Contact Information
	Tuna	*Swords*	*Billfish*	*Sharks*			
FL		X	X	X	Sharks -FL Administrative Code Ann. r.68B-44, F.A.C Swordfish/ Billfish - FL Administrative Cod Ann. r. 68B-33 F.A.C	Billfish – Longbill/Mediterranean/roundscale spearfish – harvest/possession/landing/purchase/sale/exchange prohibited Blue/white marlin and sailfish – Sale prohibited; Aggregate possession of 1 fish/person; Gear restriction (hook and line only); Minimum size limit (blue marlin – 99" LJFL; white marlin – 66" LJFL; sailfish – 63" LJFL); Recreational catch reporting requirement (all non-tournament landings must be reported NOAA within 24 hours); Must land in whole condition (gutting allowed) Swordfish - Minimum size - 47 in LJFL/29" cleithrum to keel/33 lbs. dw; Possession limit 1 fish/person/day or 3 fish/vessel/day (with 3 or more persons onboard); Commercial harvest and sale allowed only with Florida saltwater products license and a federal LAP for swordfish; Recreational catch reporting requirement (all non-tournament landings must be reported NOAA within 24 hours) Sharks – Commercial/recreational: min size – 54" except no min. size on blacknose, blacktip, bonnethead, smooth dogfish, finetooth, Atlantic sharpnose; Possession limit – 1 shark/person/day, max. 2 sharks/vessel on any vessel with 2 or more persons on board; Allowable gear – hook and line only; State waters close to commercial harvest when adjacent federal waters close; Federal permit required for commercial harvest, so federal regulations apply in state waters unless state regulations are more estrictive; Finning & filleting prohibited; Prohibited species same as federal regulations	FL Fish and Wildlife Conservation Commission Lisa Gregg Phone: 850/487-0554 Fax: 850/487-4847

State	Species				Cite Reference	Regulatory Details	Contact Information
	Tuna	*Swords*	*Billfish*	*Sharks*			
AL	X	X	X	X	Sharks - AL Administrative Code r. 220-2-.46, r.220-3-.30, r.220-3-.37	Tuna/swordfish/billfish/sharks - Reference to federal regulations Sharks – Recreational & commercial: bag limit – 1 sharpnose/person/day and 1 bonnethead/person/day; no min size; all other sharks – 1/person/day; min size – 54” FL or 30” dressed; state waters close when federal season closes; no shark fishing on weekends, Memorial Day, Independence Day, or Labor Day; Prohibited species: Atlantic angel, bigeye thresher, dusky, longfin make, sand tiger, basking, whale, white, and nurse sharks	AL Department of Conservation and Natural Resources Major Jenkins jjenkins@dcnr.state.al.us Phone: 251 861 2882

State	Species				Cite Reference	Regulatory Details	Contact Information
	Tuna	*Swords*	*Billfish*	*Sharks*			
LA	X	X	X	X	Tuna -LA Administrative Code Title 76, Pt. VII, Ch. 3, § 361 Swords/Billfish - LA Administrative Code Title76, Pt. VII, Ch. 3, § 355 Sharks - LA Administrative Code Title 76, Pt. VII, Ch. 3, § 357	Tuna - No directed recreational or commercial fishing for bluefin tuna allowed in the GOM – incidental only; Recreational bag and possession limit yellowfin tuna (3 fish/person); Rec/commercial minimum size – yellowfin, bigeye, and bluefin tuna (27 in CFL); 1 recreational trophy (>73") bluefin tuna/vessel/year and landing must be reported Billfish/Swordfish - Minimum size: blue marlin (99 in LJFL), white marlin (66" LJFL), sailfish (63 in LJFL), swordfish (29 in carcass length or 33 lbs dw); Recreational creel limit - 5 swordfish/vessel/trip Sharks - Recreational: min size – 54" FL, except Atlantic sharpnose and bonnethead; bag limit - 1 sharpnose/person/day, all other sharks – 1 fish/person/day; Commercial: 33 per vessel per trip limit; no min size; Com & rec harvest prohibited: 4/1-6/30; Prohibited species: same as federal regulations	LA Department of Wildlife and Fisheries Harry Blanchet 225 765-2889 fax (225) 765-2489 hblanchet@wlf.louisiana.gov

State	Species				Cite Reference	Regulatory Details	Contact Information
	Tuna	*Swords*	*Billfish*	*Sharks*			
MS	X		X	X	Tuna/Billfish/Sharks - MS Code Title-22 part 7	Tuna –No directed recreational or commercial fishing for bluefin tuna allowed in the GOM – incidental only; Min size: bigeye tuna 27” CFL; yellowfin tuna 27” CFL; No commercial bag limit; Bag limit of 3 yellowfin tuna/person in recreational; No recreational limit for Bigeye tuna; No commercial take of bluefin tuna; 1 recreational trophy (>73”) bluefin tuna/vessel/year and landing must be reported to MDMR Billfish - No take provisions for commercially harvested blue and white marlin and sailfish; Recreational minimum size: blue marlin 99” LJFL; white marlin 66” LJFL; sailfish 63” LJFL; No possession for longbill spear fish; No limit for recreational take Sharks – Recreational: min size - LCS/Pelagics 37” TL; SCS 25” TL; bag limit - LCS/Pelagics 1/person up to 3/vessel; SCS 4/person; Commercial and prohibited species - Reference to federal regulations	MS Department of Marine Resources Kerwin Cuevas Phone: 228/374-5000

State	Species				Cite Reference	Regulatory Details	Contact Information
	Tuna	*Swords*	*Billfish*	*Sharks*			
TX		X	X	X	Billfish/Swordfish/Sharks - TX Administrative Code Title 31, Part 2, Parks and Wildlife Code Title 5, Parks and Wildlife Proclamations 65.3 and 65.72	Blue marlin, white marlin, sailfish, sharks, longbill spearfish, and broadbill swordfish are gamefish and may only be taken with pole and line (including rod and reel); Blue marlin, white marlin, sailfish, and longbill spearfish may not be sold for any purpose Billfish - Bag limit none; min size blue marlin – 131" TL; white marlin – 86" TL; sailfish – 84" TL Sharks - Commercial/recreational: bag limit - 1 shark/person/day; Commercial/recreational possession limit is twice the daily bag limit (*i.e.*, 2 sharks/person/day); min size 24" TL for Atlantic sharpnose, blacktip, and bonnethead sharks and 64" TL for all other lawful sharks. Prohibited species: same as federal regulations	TX Parks & Wildlife Department Mark Lingo Phone: 956/350-4490 Fax: 956/350-3470

State	Species				Cite Reference	Regulatory Details	Contact Information
	Tuna	*Swords*	*Billfish*	*Sharks*			
Puerto Rico	X	X	X	X	Regulation #6768 Article 8 – General Fishing Limits Article 13 – Limitations Article 17 – Permits for Recreational Fishing (March 2004)	Illegal to sell, offer for sale, or traffic in any billfish or marlin, either whole or processed, captured in jurisdictional waters of Puerto Rico. Swordfish or billfish, tuna and shark are covered under the federal regulation known as Highly Migratory Species of the United States Department of Commerce (50 CFR, Part 635); Fishers who capture these species shall comply with said regulation; Billfish captured incidentally with long line must be released by cutting the line close to the fishhook, avoiding the removal of the fish from the water; In the case of tuna and swordfish, fishers shall obtain a permit according to the requirements of the federal government.	Puerto Rico Department of Natural and Environmental Resources Craig Lilyestrom Phone: 787-999-2200 x2689 Fax: 787-999-2271
U.S. Virgin Islands	X	X	X	X	US VI Commercial and Recreational Fisher's Information Booklet Revised June 2004	Federal regulations and federal permit requirements apply in territorial waters.	www.caribbeanfmc.com http://www.caribbeanfmc.com/usvi%20booklet/fisher%20booklet%20final.pdf

2.0 STATUS OF THE STOCKS

The thresholds used to determine the status of Atlantic HMS are presented in Figure 2.1. They are fully described in Chapter 3 of the 1999 Tunas, Swordfish, and Shark FMP and in Amendment 1 to the Billfish FMP. These thresholds were carried over in full in the 2006 Consolidated HMS FMP and are based upon the thresholds described in a paper providing the technical guidance for implementing National Standard 1 of the Magnuson-Stevens Act (Restrepo *et al*., 1998).

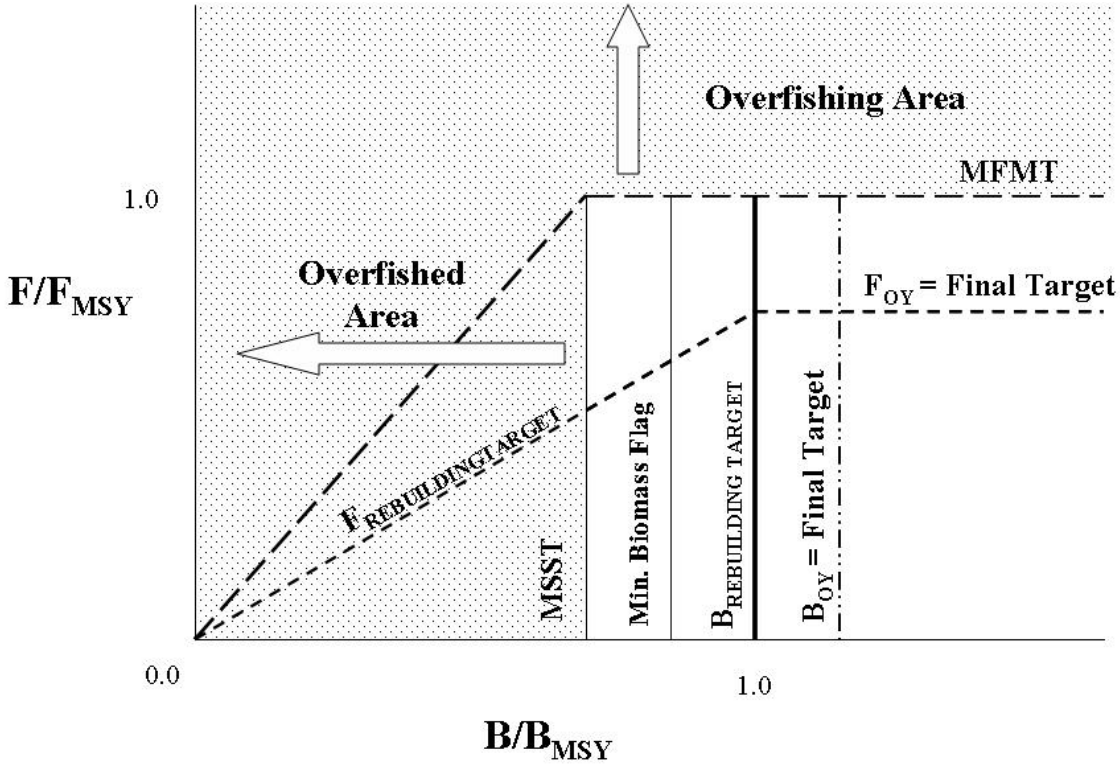

Figure 2.1 Illustration of the status determination criteria and rebuilding terms.

In summary, a species is considered overfished when the current biomass (B) is less than the minimum stock size threshold ($B < B_{MSST}$). The minimum stock size threshold (MSST) is determined based on the natural mortality of the stock and the biomass at maximum sustainable yield (B_{MSY}). Maximum sustainable yield (MSY) is the maximum long-term average yield that can be produced by a stock on a continuing basis. The biomass can be lower than B_{MSY}, and the stock not be declared overfished as long as the biomass is above B_{MSST}.

Overfishing may be occurring on a species if the current fishing mortality (F) is greater than the fishing mortality at MSY (F_{MSY}) ($F > F_{MSY}$). In the case of F, the maximum fishing mortality threshold is F_{MSY}. Thus, if F exceeds F_{MSY}, the stock is experiencing overfishing.

If a species is declared overfished or overfishing is occurring, action to rebuild the stock and/or prevent further overfishing is required by law. A species is considered rebuilt when B is greater than B_{MSY} and F is less than F_{MSY}. A species is considered healthy when B is greater than or equal to the biomass at optimum yield (B_{OY}) and F is less than or equal to the fishing mortality at optimum yield (F_{OY}).

In summary, the thresholds used to calculate the status of Atlantic HMS, as described in the 1999 FMP and Amendment 1 to the Billfish FMP, are:

- Maximum Fishing Mortality Threshold (MFMT) = $F_{limit} = F_{MSY}$;
- Overfishing is occurring when $F_{year} > F_{MSY}$;
- Minimum Stock Size Threshold (MSST) = $B_{limit} = (1\text{-}M)B_{MSY}$ when $M < 0.5 = 0.5B_{MSY}$ when $M >= 0.5$ (for billfish, the specific MSST values are: blue marlin = $0.9B_{MSY}$; white marlin = $0.85B_{MSY}$; west Atlantic sailfish = $0.75B_{MSY}$);
- Overfished when $B_{year}/B_{MSY} <$ MSST;
- Biomass target during rebuilding = B_{MSY};
- Fishing mortality during rebuilding < F_{MSY};
- Fishing mortality for healthy stocks = $0.75F_{MSY}$;
- Biomass for healthy stocks = B_{OY} = ~1.25 to $1.30B_{MSY}$;
- Minimum biomass flag = $(1\text{-}M)B_{OY}$; and
- Level of certainty of *at least* 50 percent but depends on species and circumstances.
- For bluefin tuna, spawning stock biomass (SSB) is used as a proxy for biomass
- For sharks, in some cases, spawning stock fecundity (SSF) or spawning stock number (SSN) was used as a proxy for biomass since biomass does not influence pup production in sharks.

With the exception of Atlantic sharks, stock assessments for Atlantic HMS are conducted by the International Commission for the Conservation of Atlantic Tunas' (ICCAT) Standing Committee for Research and Statistics (SCRS). In 2007, SCRS completed several stock assessments for the following Atlantic HMS: Atlantic bigeye tuna, albacore, and Mediterranean swordfish (not considered in the HMS management unit), and provided an update to the 2006 Atlantic bluefin tuna and 1999 skipjack tuna stock assessments. In 2008, SCRS completed stock assessments for western and eastern Atlantic bluefin tuna, yellowfin tuna, skipjack tuna, shortfin mako and blue sharks. Additionally, ecological risk assessments were conducted for several other shark species. Most recently, in 2009 the SCRS completed assessments for North and South Atlantic swordfish, and North Atlantic albacore, and updated the porbeagle shark assessment (porbeagle shark assessment was conducted jointly with the International Council for the Exploration of the Sea (ICES)). All SCRS final stock assessment reports can be found at www.iccat.int/assess.htm.

Atlantic shark stock assessments for large coastal sharks (LCS) and small coastal sharks (SCS) are completed by the NMFS Southeast Data, Assessment, and Review (SEDAR) process. The LCS complex, blacktip, and sandbar sharks were evaluated in 2006 (July 24, 2006, 71 FR 41774). The 2006 LCS assessment assessed blacktip sharks for the first time as two separate populations - Gulf of Mexico and Atlantic – and also assessed the status of sandbar sharks separately. In addition, the first dusky-specific shark assessment was released on May 25, 2006 (71 FR 30123). In 2007, NMFS released a stock assessment for SCS, including individual assessments for Atlantic sharpnose, bonnethead, blacknose, and finetooth sharks (November 13, 2007, 72 FR 63888).

Table 2.1 summarizes stock assessment information and the current status of Atlantic HMS as of November 2009.

Table 2.1 Stock Assessment Summary Table for Atlantic tunas, swordfish, and marlin. Source: SCRS, 2007; SCRS, 2008; SCRS, 2009; Gibson and Campana, 2005; Cortés *et al*., 2006; NMFS, 2006; NMFS, 2007.

Species	Current Relative Biomass Level	Minimum Stock Size Threshold	Current Relative Fishing Mortality Rate	Maximum Fishing Mortality Threshold	Outlook – From Status of Stocks for U.S. managed species*
West Atlantic Bluefin Tuna	SSB_{07}/SSB_{MSY} = 0.57 (0.46-0.70) (low recruitment) SSB_{07}/SSB_{MSY} = 0.14 (0.08-0.21) (high recruitment) SSB_{07}/SSB_{75} = 0.25	$0.86SSB_{MSY}$	F_{04-06}/F_{MSY} = 1.27 (1.04-1.53) (low recruitment) F_{04-06}/F_{MSY} =2.18 (1.74-2.64) (high recruitment)	F_{year}/F_{MSY} = 1.00	Overfished; overfishing is occurring.
Atlantic Bigeye Tuna	B_{06}/B_{MSY} = 0.92 (0.85-1.07)	$0.6B_{MSY}$ (age 2+)	F_{05}/F_{MSY} = 0.87 (0.70-1.24)	F_{year}/F_{MSY} = 1.00	Rebuilding; overfishing not occurring.
Atlantic Yellowfin Tuna	B_{06}/B_{MSY} = 0.96 (0.72-1.22)	$0.5B_{MSY}$ (age 2+)	$F_{current}/F_{MSY}$=0.86 (0.71-1.05)*	F_{year}/F_{MSY} = 1.00	Not overfished; overfishing not occurring.
North Atlantic Albacore Tuna	B_{07}/B_{MSY} =0.62 (0.45-0.79)	$0.7B_{MSY}$	F_{07}/F_{MSY} = 1.045 (0.85-1.23)	F_{year}/F_{MSY} = 1.00	Overfished; overfishing is occurring.
West Atlantic Skipjack Tuna	B_{06}/B_{MSY}: most likely>1	*Unknown*	F_{06}/F_{MSY}: most likely<1	F_{year}/F_{MSY} = 1.00	Unknown
North Atlantic Swordfish	B_{09}/B_{MSY} = 1.05 (0.94-1.24)	*Unknown*	F_{08}/F_{MSY} = 0.76 (0.67-0.96)	F_{year}/F_{MSY} = 1.00	Not overfished; overfishing not occurring
South Atlantic Swordfish	Likely >1	*Unknown*	Likely <1	F_{year}/F_{MSY} = 1.00	Unknown
Blue Marlin	$B_{04}<B_{MSY}$: yes	$0.9B_{MSY}$	$F_{04}>F_{MSY}$: Yes	F_{year}/F_{MSY} = 1.00	Overfished: overfishing is occurring

Species	Current Relative Biomass Level	Minimum Stock Size Threshold	Current Relative Fishing Mortality Rate	Maximum Fishing Mortality Threshold	Outlook – From Status of Stocks for U.S. managed species*
White Marlin	$B_{04}<B_{MSY}$: yes	$0.85B_{MSY}$	$F_{04}>F_{MSY}$: Possibly	F_{year}/F_{MSY} = 1.00	Overfished: overfishing is occurring
West Atlantic Sailfish	$B_{06}<B_{MSY}$: Possibly	$0.75B_{MSY}$	$F_{07}>F_{MSY}$: Possibly	*Not estimated*	Overfished; overfishing is occurring
Spearfish	*Unknown*	*Unknown*	*Unknown*	*Not estimated*	*Unknown*
LCS Complex	*Unknown*	*Unknown*	*Unknown*	*Unknown*	*Unknown*
Sandbar	SSF_{04}/SSF_{MSY} = 0.72	4.75-5.35E+05	F_{04}/F_{MSY} = 3.72	0.015	Overfished; overfishing is occurring
Gulf of Mexico Blacktip	SSF_{04}/SSF_{MSY} = 2.54-2.56	0.99-1.07E+07	F_{04}/F_{MSY} = 0.03–0.04	0.20	Not overfished; overfishing not occurring
Atlantic Blacktip	*Unknown*	*Unknown*	*Unknown*	*Unknown*	*Unknown*
Dusky Sharks	B_{03}/B_{MSY} = 0.15-0.47	*Unknown*	F_{03}/F_{MSY} = 1.68-1,810	0.00005-0.0115	Overfished; overfishing is occurring
SCS Complex	N_{05}/N_{MSY} = 1.69	2.1E+07	F_{05}/F_{MSY} = 0.25	F_{MSY} = 0.091	Not overfished; overfishing not occurring
Bonnethead Sharks	SSF_{05}/SSF_{MSY} = 1.13	1.4 E+06	F_{05}/F_{MSY} = 0.6	F_{MSY} = 0.31	Not overfished; overfishing not occurring
Atlantic Sharpnose Sharks	SSF_{05}/SSF_{MSY} = 1.47	4.09 E+06	F_{05}/F_{MSY} = 0.74	F_{MSY} = 0.19	Not overfished; overfishing not occurring
Blacknose Sharks	SSF_{05}/SSF_{MSY} = 0.48	4.3 E+05	F_{05}/F_{MSY} = 3.77	F_{MSY} = 0.07	Overfished; overfishing is occurring
Finetooth Sharks	N_{05}/N_{MSY} = 1.80	2.4E+06	F_{05}/F_{MSY} = 0.17	F_{MSY} = 0.03	Not overfished; overfishing not occurring
Northwest Atlantic Porbeagle Sharks	B_{09}/B_{MSY} = 0.43-0.65	*Unknown*	F_{08}/F_{MSY} = 0.83	F_{MSY} =0.03-0.36	Overfished; overfishing is not occurring
North Atlantic Blue Sharks	B_{07}/B_{MSY} = 1.87-2.74	*Unknown*	F_{07}/F_{MSY} = 0.13-0.17	F_{MSY} =0.15	Not overfished; overfishing not occurring

Species	Current Relative Biomass Level	Minimum Stock Size Threshold	Current Relative Fishing Mortality Rate	Maximum Fishing Mortality Threshold	Outlook – From Status of Stocks for U.S. managed species*
North Atlantic Shortfin Mako Sharks	B_{07}/B_{MSY} = 0.95-1.65	*Unknown*	F_{07}/F_{MSY} = 0.48-3.77	F_{MSY} =0.007-0.05	Approaching an overfished status; overfishing is occurring

* Status of the Stocks website: www.nmfs.noaa.gov/sfa/statusoffisheries/SOSmain.htm

2.1 Stock Assessment Details

Detailed stock assessments for each of the species listed in Table 2.1 can be found in the websites listed below.

2.1.1 Western Atlantic Bluefin tuna

Assessed by ICCAT's SCRS in 2008. The stock assessment can be found online: http://www.iccat.int/Documents/Meetings/Docs/2008_BFT_STOCK_ASSESS_REP.pdf

2.1.2 Atlantic Bigeye Tuna

Assessed by ICCAT's SCRS in 2007. The stock assessment can be found online: http://www.iccat.int/Documents/SCRS/DetRep/DET_bet.pdf

2.1.3 Atlantic Yellowfin Tuna

Assessed by ICCAT's SCRS in 2008. The stock assessment can be found online: http://www.iccat.int/Documents/Meetings/Docs/2008_TROP_REP_EN.pdf

2.1.4 North Atlantic Albacore Tuna

Assessed by ICCAT's SCRS in 2009. The stock assessment can be found online: http://www.iccat.int/Documents/Meetings/Docs/2009_ALB_ASSESS_ENG.pdf

2.1.5 West Atlantic Skipjack Tuna

Assessed by ICCAT's SCRS in 2008. The stock assessment can be found online: http://www.iccat.int/Documents/Meetings/Docs/2008_TROP_REP_EN.pdf

2.1.6 North Atlantic Swordfish

Assessed by ICCAT's SCRS in 2009. The stock assessment can be found online: http://www.iccat.int/Documents/Meetings/Docs/2009_SWO_ASSESS_ENG.pdf

2.1.7 South Atlantic Swordfish

Assessed by ICCAT's SCRS in 2009. The stock assessment can be found online: http://www.iccat.int/Documents/Meetings/Docs/2009_SWO_ASSESS_ENG.pdf

2.1.8 Blue Marlin

Assessed by ICCAT's SCRS in 2006. The stock assessment can be found online: http://www.iccat.int/Documents/SCRS/DetRep/DET_BUM-WHM.pdf

2.1.9 White Marlin

Assessed by ICCAT's SCRS in 2006. The stock assessment can be found online: http://www.iccat.int/Documents/SCRS/DetRep/DET_BUM-WHM.pdf

2.1.10 West Atlantic Sailfish

Assessed by ICCAT's SCRS in 2009. The stock assessment can be found online: http://www.iccat.int/Documents/Meetings/Docs/2009_SAI_ASSESS_ENG.pdf

2.1.11 Spearfish

Spearfish have not been individually assessed by ICCAT's SCRS due to the paucity of data. Some information can be found in the 2001 sailfish stock assessment located online: Assessed by ICCAT's SCRS in 2008. The stock assessment can be found online: http://www.iccat.int/Documents/SCRS/DetRep/DET_sai.pdf

2.1.12 LCS Complex

Assessed in 2006 through the SEDAR process. The stock assessment can be found online: http://www.sefsc.noaa.gov/sedar/Sedar_Workshops.jsp?WorkshopNum=11

2.1.13 Sandbar

Assessed in 2006 through the SEDAR process. The stock assessment can be found online: http://www.sefsc.noaa.gov/sedar/Sedar_Workshops.jsp?WorkshopNum=11

2.1.14 Gulf of Mexico Blacktip

Assessed in 2006 through the SEDAR process. The stock assessment can be found online: http://www.sefsc.noaa.gov/sedar/Sedar_Workshops.jsp?WorkshopNum=11

2.1.15 Atlantic Blacktip

Assessed in 2006 through the SEDAR process. The stock assessment can be found online: http://www.sefsc.noaa.gov/sedar/Sedar_Workshops.jsp?WorkshopNum=11

2.1.16 Dusky Sharks

Assessed in 2006 by NMFS. The stock assessment can be found online: http://www.nmfs.noaa.gov/sfa/hms/sharks/2006_Dusky_Shark_Assessment_for_distribution.pdf

2.1.17 SCS Complex

Assessed in 2007 through the SEDAR process. The stock assessment can be found online: http://www.sefsc.noaa.gov/sedar/Sedar_Workshops.jsp?WorkshopNum=13

2.1.18 Bonnethead Sharks

Assessed in 2007 through the SEDAR process. The stock assessment can be found online: http://www.sefsc.noaa.gov/sedar/Sedar_Workshops.jsp?WorkshopNum=13

2.1.19 Atlantic Sharpnose Sharks

Assessed in 2007 through the SEDAR process. The stock assessment can be found online: http://www.sefsc.noaa.gov/sedar/Sedar_Workshops.jsp?WorkshopNum=13

2.1.20 Blacknose Sharks

Assessed in 2007 through the SEDAR process. The stock assessment can be found online: http://www.sefsc.noaa.gov/sedar/Sedar_Workshops.jsp?WorkshopNum=13

2.1.21 Finetooth Sharks

Assessed in 2007 through the SEDAR process. The stock assessment can be found online: http://www.sefsc.noaa.gov/sedar/Sedar_Workshops.jsp?WorkshopNum=13

2.1.22 Northwest Atlantic Porbeagle Sharks

The most recent, 2009 stock assessment for porbeagle sharks was not posted on the ICCAT SCRS website in time for the publication of this document. The latest stock assessment, when available, can be found on the SCRS's stock assessment website: http://www.iccat.int/en/assess.htm

2.1.23 North Atlantic Blue Sharks

Assessed by ICCAT's SCRS in 2008. The stock assessment can be found online: http://www.iccat.int/Documents/Meetings/Docs/2008_SHK_Report.pdf

2.1.24 North Atlantic Shortfin Mako Sharks

Assessed by ICCAT's SCRS in 2008. The stock assessment can be found online: http://www.iccat.int/Documents/Meetings/Docs/2008_SHK_Report.pdf

Chapter 2 References

Cortés, E., P. Brooks, P. Apostolaki, and C.A. Brown. 2006. Stock assessment of Dusky shark in the U.S. Atlantic and Gulf of Mexico. NMFS Panama City Laboratory, Sustainable Fisheries Division Contribution SFD-2006-014, pp.15.

COSEWIC. 2004. COSEWIC assessment and status report on the porbeagle shark *Lamna nasus* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. viii + 43 pp. http://www.sararegistry.gc.ca/status/status_e.cfm.

Gibson, A.J.A. and S.E. Campana. 2005. Status and Recovery Potential of Porbeagle Shark in the Northwest Atlantic. Canadian Science Advisory Secretariat, Research Document 2005/053. 79 pp. http://www.dfo-mpo.gc.ca/csas/

NMFS. 1999. Amendment 1 to the Atlantic Billfish Fishery Management Plan. National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Office of Sustainable Fisheries, Highly Migratory Species Management Division, Silver Spring, MD. Public Document.

NMFS. 2003. Stock Assessment and Fishery Evaluation for Atlantic Highly Migratory Species. National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Office of Sustainable Fisheries, Highly Migratory Species Management Division, Silver Spring, MD. Public Document.

NMFS. 2006. SEDAR 11 Stock Assessment Report: Large Coastal Shark Complex, Blacktip and Sandbar Shark. Highly Migratory Species Management Division, 1315 East-West Highway, Silver Spring, MD 20910. 257 pp.

NMFS. 2007. SEDAR 13 Stock Assessment Report: Small Coastal Sharks, Atlantic Sharpnose, Blacknose, Bonnethead, and Finetooth Shark. Highly Migratory Species Management Division, 1315 East-West Highway, Silver Spring, MD 20910. 375 pp.

Restrepo, V.R., G.G. Thompson, P.M. Mace, W.L. Gabriel, L.L. Low, A.D. MacCall, D. Methot, J.E. Powers, B.L. Taylor, P.R. Wade, and J.F. Witzig, 1998. Technical guidance on the use of precautionary approaches to implementing National Standard 1 of the Magnuson-Stevens Fishery Conservation and Management Act. NOAA Tech Memo NMFS-S/SPO. 54 pp.

SCRS. 2004. Report of the 2004 Meeting of the Standing Committee on Research & Statistics. International Commission for the Conservation of Atlantic Tunas. PLE-025/2004. Madrid, Spain, 4-8 October 2004.

SCRS. 2005. Report of the 2004 Meeting of the Standing Committee on Research & Statistics. International Commission for the Conservation of Atlantic Tunas. PLE-013/2005. Madrid, Spain, 3-7 October 2005.

SCRS. 2006. Report of the 2006 Meeting of the Standing Committee on Research & Statistics. International Commission for the Conservation of Atlantic Tunas. PLE-014/2006. Madrid, Spain, 2-6 October 2006.

SCRS. 2007. Report of the Standing Committee on Research and Statistics. ICCAT SCRS. Madrid, Spain, October 1-5, 2007. 216 pp.

SCRS. 2008. Report of the Standing Committee on Research and Statistics. ICCAT SCRS. Madrid, Spain, September 29-October 3, 2008. 238 pp.

SCRS. 2009. Report of the Standing Committee on Research and Statistics. ICCAT SCRS. Madrid, Spain, October 5-9, 2009. 270 pp.

3.0 ESSENTIAL FISH HABITAT

3.1 Amendment 1 to the Consolidated Atlantic Highly Migratory Species Fishery Management Plan: Essential Fish Habitat

The Magnuson-Stevens Act requires NMFS to identify and describe EFH, minimize to the extent practicable the adverse effects of fishing on EFH, and identify other actions to encourage the conservation and enhancement of EFH. In 2009, NMFS completed the five year review and update of Essential Fish Habitat (EFH) for Atlantic HMS with the publishing of the Final Amendment 1 to the Consolidated HMS FMP (June 12, 2009, 74 FR 288018). On June 19, 2009, the Environmental Protection Agency (EPA) published a notice of availability (74 FR 29208) of the Final Environmental Statement (FEIS) for Amendment 1. In Amendment 1, NMFS updated and revised existing identifications and descriptions of EFH for Atlantic HMS, designated a new Habitat Area of Particular Concern (HAPC) for bluefin tuna in the Gulf of Mexico, and analyzed fishing and non-fishing impacts on EFH pursuant to Section 305(b) of the Magnuson-Stevens Act. Since the publication of Amendment 1, NMFS has published a Draft Environmental Impact Statement (DEIS) for Amendment 3 to the 2006 Consolidated HMS FMP (July 24, 2009, 74 FR 36892) which, among other things, proposed to add smooth dogfish under Secretarial management. As a Magnuson-Stevens Act condition of adding a species to federal management, NMFS designated proposed EFH for smooth dogfish using the same methodology employed in Amendment 1. Details, including a map of the proposed EFH can be found in Chapter 11 of Amendment 3. A summary of the management history of HMS EFH is given in Table 3.1

Table 3.1 Management history for HMS EFH.

FMP or Amendment	Species for which EFH was identified
1999 FMP for Atlantic Tunas, Swordfish, and Sharks	EFH first identified and described for Atlantic tunas, swordfish and sharks
1999 Amendment 1 to the Billfish FMP	EFH first identified and described for Atlantic billfish
2003 Amendment 1 to the FMP for Atlantic Tunas, Swordfish and Sharks	EFH updated for five shark species (blacktip, sandbar, finetooth, dusky, and nurse sharks)
2006 Consolidated Atlantic HMS FMP	Comprehensive review of EFH for all HMS. EFH for all Atlantic HMS consolidated into one FMP No changes to EFH descriptions or boundaries
2009 Amendment 1 to the Consolidated Atlantic HMS FMP	EFH updated for all federally managed Atlantic HMS. HAPC for bluefin tuna spawning area designated in the Gulf of Mexico

Identification and Description of EFH

A search of new literature and information was undertaken to assess habitat use and ecological roles of HMS EFH. Published and unpublished scientific reports, fishery dependent and independent data sets, and expert and anecdotal information detailing the habitats used by the managed species were evaluated and synthesized for inclusion in Amendments 1and 3. NMFS also conducted a comprehensive review of all federally and non-federally managed fishing gears that formed the basis for further analysis on gear impacts in the amendment. Additionally, NMFS

took into account comments received from the HMS Advisory Panel and the public on how best to proceed to update EFH, data considerations, extent of EFH, impacts on EFH, and concerns about HAPCs. including requests to consider HAPCs for bluefin tuna spawning areas in the Gulf of Mexico.

NMFS established new EFH boundaries based on the 95 percent probability boundary using Geographic Information System (GIS) analyses and Hawth's analysis tool. The probability boundary was created by taking all of the available distribution points for a particular species and life stage and creating a percent volume contour (PVC, or probability boundary). The probability boundaries are based on all data points collected ocean-wide and not just data points inside the Exclusive Economic Zone (EEZ), thus taking into account the migratory nature of HMS. As EFH designations are restricted from extending beyond the U.S EEZ, the EEZ boundary was used as the cut-off point for the EFH delineations.

EFH maps are presented in hard copy in Amendments 1 and 3 and electronically on the internet via spatial files in Adobe (pdf) format. The electronic maps may be accessed on the HMS EFH Evaluation Tool site, an interactive internet-based mapping program found at:
http://sharpfin.nmfs.noaa.gov/website/EFH_Mapper/HMS/map.aspx

In addition, maps and downloadable spatial EFH files for all federally managed species can be found on the NMFS EFH Mapper at:
http://sharpfin.nmfs.noaa.gov/website/EFH_Mapper/map.aspx

Habitat Areas of Particular Concern

NMFS established a new HAPC in the Gulf of Mexico for spawning bluefin tuna while maintaining the current HAPCs for sandbar sharks along the Atlantic coast. The new area meets at least one, and possibly more, of the requirements for HAPC designation, including "the importance of the ecological function provided by the habitat," "whether and to what extent, development activities are, or will be, stressing the habitat" and the "rarity of the habitat type." The area includes a majority of the locations where bluefin tuna larval collections have been documented, overlaps with both updated and existing adult and larval bluefin tuna EFH, and incorporates portions of an area identified as a primary spawning location by Teo *et al.* (2007). The Gulf of Mexico is the only known spawning area for western Atlantic bluefin tuna, and the HAPC designation highlights the importance of the area for bluefin tuna spawning.

Fishing and Non-fishing Impacts

Amendment 1 included an analysis of fishing and non-fishing impacts on EFH as required by the Magnuson-Stevens Act and the EFH regulations. Most HMS EFH is comprised of the water column. As water column characteristics such as temperature, salinity, and dissolved oxygen are unlikely to be affected by fishing gears, NMFS concluded that fishing gears are not having a negative effect on most HMS EFH. For some shark species, EFH includes specific benthic habitat types such as sand, mud, or submerged aquatic vegetation and of the gears used in HMS fisheries only shark bottom longline (BLL) gear is considered to potentially affect EFH. NMFS reviewed all available relevant information such as the intensity, extent, and frequency of

any adverse effects on EFH and concluded that shark BLL gear as currently used in the shark fishery is having no more than a minimal and temporary effect on EFH. Likewise, other HMS gears are not considered to have an impact on EFH. As a result, NMFS implemented no measures to regulate shark BLL gear or any other HMS gears to minimize fishing impacts in Amendment 1.

3.2 Shark Nursery Grounds and Essential Fish Habitat Studies

Although Amendment 1 has been completed, NMFS is continuing to study EFH for HMS to refine our understanding of important habitat areas for HMS. The Magnuson-Stevens Act defines EFH as habitat necessary for spawning, breeding, feeding, and growth to maturity. The Magnuson-Stevens Act requires the identification of EFH in fishery management plans, and towards that end NMFS has funded two cooperative survey programs designed to further delineate shark nursery habitats in the Atlantic and Gulf of Mexico. The Cooperative Atlantic States Shark Pupping and Nursery (COASTSPAN) Survey, and The Cooperative Gulf of Mexico States Shark Pupping and Nursery (GULFSPAN) Survey are designed to assess the geographical and seasonal extent of shark nursery habitat, determine which shark species use these areas, and gauge the relative importance of these coastal habitats in order to provide information that can then be used in EFH determinations. Also, survey data collected are being incorporated into stock assessment models as abundance trends and life history parameters.

The cooperative COASTSPAN program, administered by the NMFS Northeast Fishery Science Center 's Narragansett, Rhode Island laboratory, has been collecting information on shark nursery areas along the U.S. Atlantic coast since 1998. It involves NMFS scientists along with state and university researchers in Massachusetts, Delaware, North Carolina, South Carolina, Georgia and the U.S. Virgin Islands. NMFS initiated the GULFSPAN program in 2003 to expand upon the Atlantic COASTSPAN Survey. This cooperative program, which is administered by the NMFS Southeast Science Center's Panama City, Florida laboratory, includes, in addition to NMFS scientists, the states of Florida, Alabama, Mississippi, and Louisiana. Following is a summary of the results from the 2008 COASTSPAN and GULFSPAN surveys (Bethea *et al*., 2009; McCandless *et al.*, 2009).

Massachusetts

COASTSPAN sampling took place in a number of locations in Buzzards Bay. Smooth dogfish dominated the shark catch, with a few spiny dogfish caught at the beginning and end of the sampling season. The majority of smooth dogfish caught were mature. Greater than 90 percent of all male smooth dogfish were mature and more than 50 percent of female smooth dogfish were mature. Males were captured in the deeper waters of the Bay and females, some of which were found to be pregnant, were caught in the shallower waters of the Bay. Limited sampling was conducted in Duxbury Bay and the St. Jones River in 2008. The shark catch consisted entirely of immature sand tigers. The majority of the catch was young-of-the-year, indicating the importance of these areas as potential nursery habitat for this prohibited species.

Delaware Bay

COASTSPAN sampling encompassed the entire Bay from the mouth of the Delaware River to the mouth of Delaware Bay using a random stratified design based on depth and

geographic location. Additional sampling was also conducted at historical fixed stations throughout the bay. Smooth dogfish was the most abundant shark species caught in 2008, followed by sandbar, sand tiger, and Atlantic sharpnose. All Atlantic sharpnose sharks caught were mature males. The majority of smooth dogfish caught (84 percent) were adults, with over 80 percent as mature females, some of which were found to be pregnant. Adult female sandbar sharks and adult male and female sand tigers were captured in the Bay, but the overwhelming majority of these two species were captured as immature. Young-of-the-year sandbar sharks, smooth dogfish and sand tigers were primarily caught in the shallower regions of the bay along the Delaware and New Jersey coastlines. Delaware Bay provides important nursery habitat for these shark species. The extensive use of the Bay by all life stages of sand tiger and smooth dogfish also highlight the seasonal importance of this habitat.

North Carolina

Limited COASTSPAN sampling occurred in nearshore waters along the southern coast of North Carolina from New River Inlet to the South Carolina border. Atlantic sharpnose was the most abundant species caught along with bonnethead, blacknose, blacktip and tiger sharks.

South Carolina

COASTSPAN sampling took place in both estuarine and nearshore waters along the South Carolina coast including: Bulls Bay, Charlestown Harbor, Fort Johnson, the Humps, around Morgan and Morris Islands, North Edisto, Port Royal Sound, St. Helena Sound, and Winyah Bay. Sixteen species of sharks were captured, the most abundant of which was Atlantic sharpnose. Other sharks included sandbar, bonnethead, blacktip, finetooth, blacknose, smooth hammerhead, scalloped hammerhead, lemon, spinner, tiger, nurse, sand tiger, bull and great hammerhead. Five species were also captured as young-of-the-year in South Carolina estuarine waters: Atlantic sharpnose, blacktip, finetooth, smooth hammerhead and sandbar sharks. The majority of each shark species captured were immature, with the exception of three species: Atlantic sharpnose (16 percent immature), blacknose (24 percent), and bonnethead (49 percent) sharks. These findings not only highlight the importance of South Carolina estuarine and nearshore waters as nursery habitat for many small and large coastal shark species, but also indicate the extensive use of these waters as habitat for several adult small coastal shark species.

Georgia

COASTSPAN sampling was primarily concentrated in the St. Simon and St. Andrew sound systems. Of the seven species of shark captured, Atlantic sharpnose was the most abundant. Other sharks included bonnethead, sandbar, blacktip, blacknose, scalloped hammerhead and smooth dogfish. Three species captured were also present as young-of-the-year in both sound systems: Atlantic sharpnose, sandbar and blacktip sharks. The majority of sharks captured were immature (70 percent), indicating the importance of these areas as potential nursery habitat for both small and large coastal shark species.

U.S. Virgin Islands

COASTSPAN sampling took place in Coral Bay and Fish Bay of St. John in 2008. Of the three species of shark captured, blacktip was the most abundant followed by lemon and nurse sharks. The majority of sharks captured were immature. Blacktip and lemon sharks were also present as young-of-the-year in both bays. These results strengthen previous year's work that identified these areas as important nursery habitat for several large coastal shark species. In addition, nurse shark mating events were frequently sighted during sampling, indicating the use of these areas as potential mating habitat for this species.

Florida

Under the GULFSPAN program a number of areas were sampled: St. Andrew Bay, Crooked Island Sound, St. Joseph Bay, the Gulf side of St. Vincent Island, and Apalachicola Bay, Turkey Point and St. George Sound, Cedar Key, Suwannee Sound, and Waccasassa Bay. Eleven species of sharks were captured the most abundant of which was Atlantic sharpnose. Others included blacktip, bonnethead, scalloped hammerhead, blacknose, spinner, finetooth, Florida smoothhound, sandbar, bull, and great hammerhead. The majority of the sharks captured were immature, indicating that areas along the Florida Gulf coast remain important potential nursery areas for both large and small coastal shark species. In general, young-of-the-year sharks were more often collected in shallower water with higher temperature, lower salinity, and more turbid conditions compared to juveniles and adults. Benthic habitat included shallow seagrass beds, clay, sand, mud, and oyster shoals.

Alabama

GULFSPAN sampling took place in Mississippi Sound (Point Aux Pins, Dauphin island), Mobile Bay (Little Dauphin Island, Pelican Bay), and Perdido Bay. Seven species of sharks were collected, the most abundant of which was Atlantic sharpnose. Others included finetooth, bonnethead, blacktip, bull, and scalloped hammerhead, and spinner. Over 90 percent of the individuals collected were immature, indicating potential nursery areas for the species captured. In general, shark abundance was higher in Mississippi Sound that in Mobile Bay and Perdido Bay, with the sharks occupying a wide range of habitats and environmental conditions within those areas.

Mississippi

A number of GULFSPAN sampling sites were located in Mississippi Sound around Cat Island, Horn Island, Round island, Deer Island, and in Davis Bayou. Of the six species of sharks were captured, Atlantic sharpnose was the most prevalent. Others included blacktip, finetooth, bull, bonnethead, and spinner. Over 60 percent were immature, indicating the Mississippi Sound continues to be a potential nursery area for the species found there. Benthic habitat included sand, silt, mud, grassbeds, and an oyster reef. Juvenile and young-of-the-year sharks appeared to prefer the shallow, warmer, lower salinity and more turbid waters compared to adult sharks.

Louisiana

GULFSPAN sampling took place at a number of locations in Terrebonne Bay. Three species of sharks were collected the most abundant of which was blacktip followed by Atlantic sharpnose, and finetooth. As 95 percent were immature, the areas sampled appear to be important nursery habitats for both large and small coastal shark species.

Conclusion

The COASTSPAN and GULFSPAN studies indicate further refinement of EFH would be beneficial. Although many areas are already designated as EFH, NMFS is seeking to determine specific habitat characteristics that comprise EFH. Future work through the COASTSPAN and GULFSPAN programs can provide time series data that will contribute to this effort and also be used to monitor changes in the survey areas.

Chapter 3 References

Bethea, D.M., M.J. Ajemian, R.D. Grubbs, E.R. Hoffmayer, R. Del Rio, G.W. Peterson, D.M. Baltz. 2009. Shark Nursery Grounds and Essential Fish habitat Studies. GULFSPAN Gulf of Mexico-FY 08. Cooperative Gulf of Mexico States Shark Pupping and Nursery Survey. Report to NOAA Fisheries, Highly Migratory Species Division. 64 pp.

McCandless, C.T., W.D. McElroy, B. Frazier, C. Belcher, D. Perry, B. DeAngelis, J. Kneebone, C. Collier, M. Evans and D. Abel. 2009. Summary Report of the 2008 Cooperative Atlantic States Shark Pupping and Nursery (COASTSPAN) Survey. An internal report to NOAA Fisheries, Highly Migratory Species Division.

Teo, S.L.H., A. Boustany, and B.A. Block. 2007. Oceanographic preferences of Atlantic bluefin tuna, *Thunnus thynnus*, on their Gulf of Mexico breeding grounds. Marine Biology. Marine Biology 152:1105–1119.

4.0 FISHERY DATA UPDATE

In this section, HMS fishery data, with the exception of some data on Atlantic sharks, are analyzed by gear type. Section 4.10 provides a summary of landings by species. While HMS fishermen generally target particular species, the non-selective nature of most fishing gears warrants analysis and management on a gear-by-gear basis. In addition, issues such as bycatch and safety are generally better addressed by gear type. A summary of bycatch, incidental catch, and protected resource interaction statistics can be found in Chapter 7.0 of this document.

The revised list of authorized fisheries and fishing gear used in those fisheries became effective December 1, 1999 (64 FR 67511). The rule applies to all U.S. marine fisheries, including Atlantic HMS. As stated in the rule, "no person or vessel may employ fishing gear or participate in a fishery in the exclusive economic zone (EEZ) not included in this List of Fisheries (LOF) without giving 90 days' advance notice to the appropriate Fishery Management Council (Council) or, with respect to Atlantic HMS, the Secretary of Commerce (Secretary)." Authorized gear types include:

- Swordfish handgear fishery – rod and reel, harpoon, handline, bandit gear, buoy gear;
- Swordfish recreational fishery - rod and reel, handline
- Pelagic longline fishery – longline
- Shark gillnet fishery – gillnet
- Shark bottom longline fishery – longline
- Shark handgear fishery - rod and reel, handline, bandit gear
- Shark recreational fishery – rod and reel, handline
- Tuna purse seine fishery – purse seine
- Tuna recreational fishery– rod and reel, handline, speargun (speargun allowed for tunas other than bluefin)
- Tuna handgear fishery – rod and reel, harpoon, handline, bandit gear, green-stick
- Atlantic billfish recreational fishery – rod and reel only

Due to the nature of the Standing Committee for research and Statistics (SCRS) data collection, Table 4.1 depicts a summary of U.S. and international HMS catches by species rather than gear type. International catch levels and U.S. reported catches for HMS, other than sharks, are taken from the 2009 Standing Report of the SCRS (SCRS, 2009). The U.S. percentage of regional and total catch of HMS species is presented (Table 4.1) to provide a basis for comparison of the U.S. catch relative to other nations/entities. Catch of billfish includes both recreational landings and dead discards from commercial fisheries; catch for bluefin tuna includes commercial landings and discards and recreational landings; and swordfish include commercial landings and discards. International catch and landings tables are included for the pelagic longline and purse seine fisheries in Sections 4.1 and 4.2 of this document. At this point, data necessary to assess the U.S. regional and total percentage of international catch levels for most Atlantic shark species are unavailable.

Table 4.1 Calendar Year 2008 U.S. vs. International Catch (mt ww) of HMS other than sharks. Source: SCRS, 2009.

Species	Total International Reported Catch	Region of U.S. Involvement	Total Regional Catch	U.S. Catch	U.S. Percentage of Regional Catch	U.S. Percentage of Total Atlantic Catch
Atlantic Swordfish	21,859* (includes N. & S. Atlantic)	North Atlantic	10,752*	2,530	23.53%	11.57%
		South Atlantic	11,108*	0	0%	
Atlantic Bluefin Tuna	25,944*	West Atlantic	2,015	937	46.50%	3.61%
Atlantic Bigeye Tuna	69,821	Total Atlantic	69,821	488	0.69%	0.69%
Atlantic Yellowfin Tuna	107,277	West Atlantic	17,013	2,407	14.15%	2.24%
Atlantic Albacore Tuna	41,847 (includes N. & S. Atlantic and Mediterranean)	North Atlantic	20,359	248	1.22%	0.59%
		South Atlantic	18,902	0	0.00%	
Atlantic Skipjack Tuna	148,872	West Atlantic	22,011	67	0.30%	0.05%
Atlantic Blue Marlin	3,484	North Atlantic	1,269	51	4.02%	1.46%
Atlantic White Marlin	377	North Atlantic	117	2	1.70%	0.53%
Atlantic Sailfish	2,971	West Atlantic	1,263	12	0.95%	0.40%

* Actual catches are likely higher given significant non-compliance with ICCAT reporting requirements by other ICCAT parties.

4.1 Pelagic Longline (PLL) Fishery

4.1.1 Current Management

The PLL fishery for Atlantic HMS primarily targets swordfish, yellowfin tuna, and bigeye tuna in various areas and seasons. Secondary target species include dolphin, albacore tuna, and, to a lesser degree, sharks. Although this gear can be modified (*e.g.*, depth of set, hook type, hook size, bait, *etc*.) to target swordfish, tunas, or sharks, it is generally a multi-species fishery. These vessel operators are opportunistic, switching gear style and making subtle changes to target the best available economic opportunity of each individual trip. PLL gear sometimes attracts and hooks non-target finfish with little or no commercial value as well as species that cannot be retained by commercial fishermen due to regulations, such as billfish. PLL gear may also interact with protected species such as marine mammals, sea turtles, and seabirds. Thus, this gear has been classified as a Category I fishery with respect to the Marine Mammal Protection Act (MMPA). Any species (or undersized catch of permitted species) that cannot be landed due to fishery regulations is required to be released, regardless of whether the catch is dead or alive.

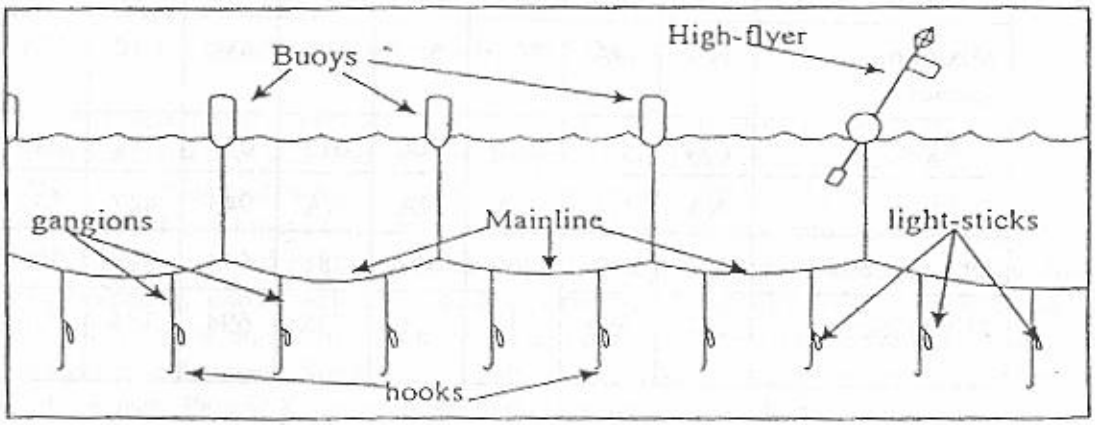

Figure 4.1 Typical U.S. Pelagic Longline Gear. Source: Arocha, 1996.

PLL gear is composed of several parts (Figure 4.1). The primary fishing line, or mainline of the longline system, can vary from five to 40 miles in length, with approximately 20 to 30 hooks per mile. Based upon observer reports from 1992 – 2004, the shortest length of a mainline set on an observed trip was 4.4 nautical miles (nm) while the longest set during a trip was 46.6 nm (Keene, *et. al*., 2006). The depth of the mainline is determined by ocean currents and the length of the floatline, which connects the mainline to several buoys, and periodic markers which can have radar reflectors or radio beacons attached. Each individual hook is connected by a leader, or gangion, to the mainline. Lightsticks, which contain light emitting chemicals, are often used, particularly when targeting swordfish. When attached to the hook and suspended at a certain depth, lightsticks attract baitfish, which may, in turn, attract pelagic predators (NMFS, 1999).

When targeting swordfish, PLL gear is generally deployed at sunset and hauled at sunrise to take advantage of swordfish nocturnal near-surface feeding habits (NMFS, 1999). In general,

longlines targeting tunas are set in the morning, fished deeper in the water column, and hauled back in the evening. Except for vessels of the distant water fleet, which undertake extended trips, fishing vessels preferentially target swordfish during periods when the moon is full to take advantage of increased densities of pelagic species near the surface. The number of hooks per set varies with line configuration and target species (Table 4.2) (NMFS, 1999).

Table 4.2 Average Number of Hooks per PLL Set, 2000 - 2008. Source: PLL logbook data.

Target Species	2000	2001	2002	2003	2004	2005	2006	2007	2008
Swordfish	550	625	695	711	701	747	742	672	708
Bigeye tuna	454	671	755	967	400	634	754	773	751
Yellowfin tuna	772	731	715	720	696	691	704	672	678
Mix of tuna species	638	719	767	765	779	692	676	640	747
Shark	621	571	640	696	717	542	509	494	377
Dolphin	943	447	542	692	1,033	734	988	789	989
Other species	504	318	300	865	270	889	236	NA	NA
Mix of species	694	754	756	747	777	786	777	757	749

Figure 4.2 illustrates basic differences between swordfish (shallow) and tuna (deep) longline sets. Swordfish sets are buoyed to the surface, have fewer hooks between floats, and are relatively shallow. This same type of gear arrangement is used for mixed target species sets. Tuna sets use a different type of float placed much further apart. Compared with swordfish sets, tuna sets have more hooks between the floats and the hooks are set much deeper in the water column. It is believed that tuna sets hook fewer turtles than the swordfish sets because of the difference in fishing depth. In addition, tuna sets use bait only, while swordfish sets use a combination of bait and lightsticks. Compared with vessels targeting swordfish or mixed species, vessels specifically targeting tuna are typically smaller and fish different grounds.

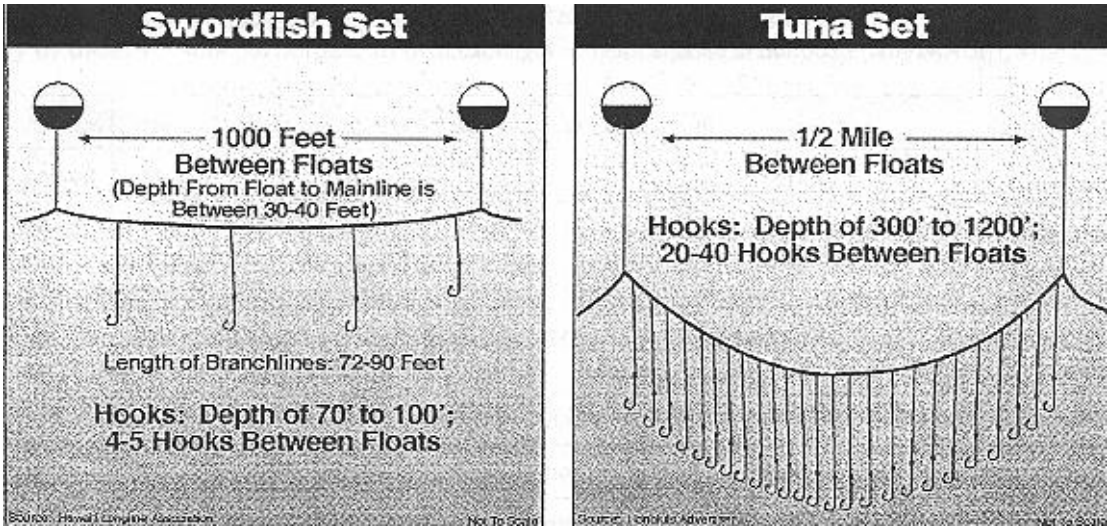

Figure 4.2 Different Pelagic Longline Gear Deployment Techniques. Source: Hawaii Longline Association and Honolulu Advertiser.

NOTE: This figure is only included to show basic differences in pelagic longline gear configuration and to illustrate that this gear may be altered to target different species.

Regional U.S. Pelagic Longline Fisheries Description

The U.S. PLL fishery has historically been comprised of five relatively distinct segments with different fishing practices and strategies. These segments are: 1) the Gulf of Mexico yellowfin tuna fishery; 2) the South Atlantic-Florida east coast to Cape Hatteras swordfish fishery; 3) the Mid-Atlantic and New England swordfish and bigeye tuna fishery; 4) the U.S. distant water swordfish fishery; and, 5) the Caribbean Islands tuna and swordfish fishery. Each vessel type has different range capabilities due to fuel capacity, hold capacity, size, and construction. In addition to geographical area, these segments have historically differed by percentage of various target and non-target species, gear characteristics, and deployment techniques. Some vessels fish in more than one fishery segment during the course of a year (NMFS, 1999). Due to the various changes in the fishery, *i.e.*, regulations, operating costs, market conditions, species availability, etc., the fishing practices and strategies of these different segments may change over time.

<u>The Gulf of Mexico Yellowfin Tuna Fishery</u>

Gulf of Mexico vessels primarily target yellowfin tuna year-round; however, a handful of these vessels directly target swordfish, either seasonally or year-round. Longline fishing vessels that target yellowfin tuna in the Gulf of Mexico also catch and sell dolphin, swordfish, other tunas, and sharks. During yellowfin tuna fishing, few swordfish are captured incidentally. Many of these vessels participate in other Gulf of Mexico fisheries (targeting shrimp, shark, and snapper/grouper) during allowed seasons. Home ports for this fishery include, but are not limited to, Madiera Beach, Florida; Panama City, Florida; Dulac, Louisiana; and Venice, Louisiana (NMFS, 1999).

For catching tuna, the longline gear is configured similarly to swordfish longline gear but is deployed differently. The gear is typically set in the morning (between two a.m. and noon) and retrieved in the evening or night (4 p.m. to midnight). Fishing occurs in varying water temperatures; however, yellowfin tuna are generally targeted in the western Gulf of Mexico during the summer when water temperatures are high. In the past, fishermen have used live bait, however, NMFS prohibited the use of live bait in the Gulf of Mexico in an effort to decrease bycatch and bycatch mortality of billfish (65 FR 47214, August 1, 2000). This rule also closed the Desoto Canyon area (year-round closure) to PLL gear. In the Gulf of Mexico, and all other areas, except the Northeast Distant Waters (NED), specific circle hooks (16/0 or larger non-offset and 18/0 or larger with an offset not to exceed 10 degrees) are currently required, as are whole finfish and squid baits.

The South Atlantic – Florida East Coast to Cape Hatteras Swordfish Fishery

Historically, South Atlantic pelagic longline vessels targeted swordfish year-round, although yellowfin tuna and dolphin fish were other important marketable components of the catch. In 2001 (65 FR 47214, August 1, 2000), the Florida East Coast closed area (year-round closure) and the Charleston Bump closed area (February through April closure) became effective. These PLL closures, implemented to reduce bycatch and bycatch mortality of protected species, non-target species, and undersized fish, effectively shut down a large portion of the PLL fishery in the South Atlantic.

Prior to the PLL closures, smaller vessels made short fishing trips from the Florida Straits north to the bend in the Gulf Stream off Charleston, South Carolina (Charleston Bump). Mid-sized and larger vessels in this segment of the fishery migrate seasonally on longer trips to areas ranging from the Yucatan Peninsula throughout the West Indies and Caribbean Sea. Some trips also range as far north as the Mid-Atlantic coast of the United States to target bigeye tuna and swordfish during the late summer and fall. Home ports (including seasonal ports) for this fishery include, but are not limited to, Georgetown, South Carolina; Charleston, South Carolina; Fort Pierce, Florida; Pompano Beach, Florida; and Key West, Florida. This segment of the fishery consists of small to mid-size vessels, which typically sell fresh swordfish to local high-quality markets (NMFS, 1999).

The Mid-Atlantic and New England Swordfish and Bigeye Tuna Fishery

Fishing in this area has evolved during recent years to focus almost year-round on directed tuna trips, with substantial numbers of swordfish trips as well. Some vessels participate in directed bigeye/yellowfin tuna fishing during the summer and fall months and then switch to bottom longline and/or shark fishing during the winter when the large coastal shark season is open. During the season, vessels primarily offload in the ports of New Bedford, Massachusetts; Barnegat Light, New Jersey; Ocean City, Maryland; and Wanchese, North Carolina (NMFS, 1999). In 1999, NMFS closed the Northeastern U.S. area in June to pelagic longline gear to reduce bluefin tuna discards (64 FR 29090, May 28, 1999). Section 7.7 of this document describes changes in discards of bluefin tuna and other species. Additionally, in 2009, NOAA Fisheries published the final Pelagic Longline Take Reduction Plan (PLTRP) (74 FR 23349, May 19, 2009) to protect pilot whales and Risso's dolphins which included, among other measures, a

requirement that PLL vessel operators fishing in the Cape Hatteras Special Research Area contact NOAA Fisheries at least 48 hours prior to a trip, and carry observers if requested.

The U.S. Atlantic Northeast Distant Water (NED) Swordfish Fishery

This fishing ground covers virtually the entire span of the western north Atlantic, from as far east as the Azores and the Mid-Atlantic Ridge. Large fishing vessels that fish in these distant waters operate out of Mid-Atlantic and New England ports during the summer and fall months targeting swordfish and tunas, and then move to Caribbean ports during the winter and spring months. Many of the current distant water operations were among the early participants in the U.S. directed Atlantic commercial swordfish fishery. These larger vessels, with greater ranges and capacities than coastal fishing vessels, enabled the United States to become a significant participant in the north Atlantic fishery. In the past, some of these vessels have also fished for swordfish in the south Atlantic (*i.e.*, south of 5° N. lat). In recent years however, no U.S. vessels have fished for swordfish in the South Atlantic.

The NED vessels traditionally have been larger than their southeast counterparts because of the greater distances to the fishing grounds. Thus, trips in this fishery tend to be longer than in the other longline fisheries. Ports for this fishery range from San Juan, Puerto Rico through Portland, Maine, and include New Bedford, Massachusetts, and Barnegat Light, New Jersey (NMFS, 1999). This segment of the fleet was directly affected by the L-shaped closure in 2000 and the NED closure implemented in 2001. A number of these vessels have returned to the NED fishery since the area was reopened pursuant to the issuance of the July 6, 2004, rule to reduce sea turtle bycatch and bycatch mortality (69 FR 40734, July 6, 2004)). Unlike other areas, vessels fishing in the NED are required to use 18/0 or larger circle hooks with an offset not to exceed 10 degrees and whole mackerel or squid baits. The NED is also allocated a 25 mt bluefin tuna quota. In 2009, the 25 mt quota in the NED was attained for the first time. As a result, the bluefin tuna target catch requirements specified for the longline category became applicable in the NED from October 20 - December 31, 2009.

The Caribbean Tuna and Swordfish Fishery

In the past, this fleet has been similar to the southeast coastal fishing fleet in that it consisted primarily of smaller vessels making short, relatively near-shore trips, producing high quality fresh product (NMFS, 1999). The U.S. Caribbean fleet historically landed swordfish and tunas that supported the tourist trade in the Caribbean as well as a tuna canning industry that no longer exists. In recent years, yellowfin tuna have been the primary species of tuna landed using PLL gear, with additional landings of skipjack, bigeye, and albacore tunas. Because no Atlantic Tunas Longline permits are currently held by residents of Puerto Rico or the U.S. Virgin Islands, it can be assumed that these tuna landings were reported by vessels fishing in the Caribbean, but based out of other U.S. ports.

Management of the U.S. Pelagic Longline Fishery

The U.S. Atlantic PLL fishery is guided by a swordfish quota that is divided between the North and South Atlantic (separated at 5° N. Lat.). Other regulations include minimum sizes for

swordfish, yellowfin tuna, bigeye tuna, and bluefin tuna; bluefin tuna target catch requirements; shark quotas; protected species incidental take limits; reporting requirements (including logbooks); gear and bait requirements; limited access vessel permits, and mandatory workshop requirements. Current billfish regulations prohibit the retention of billfish by commercial vessels, or the sale of billfish from the Atlantic Ocean. As a result, all billfish hooked on PLL gear must be discarded, and are considered bycatch. PLL is a heavily managed gear type and is strictly monitored. Because it is difficult for PLL fishermen to avoid undersized or prohibited fish in some areas, NMFS has closed areas in the Gulf of Mexico and along the U.S. East Coast. The intent of these closures was to decrease bycatch in the PLL fishery by closing areas with the highest bycatch rates. There are also time/area closures for PLL fishermen designed to reduce the incidental catch of bluefin tuna and sea turtles. In order to enforce time/area closures and to monitor the fishery, NMFS requires all PLL vessels to report positions on an approved vessel monitoring system (VMS).

In addition to the regulations mentioned above, to protect sea turtles, vessels with PLL gear onboard must, at all times, in all areas open to PLL fishing except the NED, possess onboard and/or use only 16/0 or larger non-offset circle hooks and/or 18/0 or larger circle hooks with an offset not to exceed 10 degrees. Only whole finfish and squid baits may be possessed and/or utilized with allowable hooks. Vessels fishing in the NED are required to use 18/0 or larger circle hooks with an offset not to exceed 10 degrees and whole mackerel or squid baits. All PLL vessels must possess and use sea turtle handling and release gear in compliance with NMFS careful release protocols. Additionally, all PLL vessel owners and operators must be certified in the use of the protected species handling and release gear. Certification must be renewed every three years and can be obtained by attending a training workshop. Approximately 18 - 24 workshops are conducted annually, and they are held in areas with significant numbers of PLL permit holders.

In 2009, to protect pilot whales and Risso's dolphins, the PLTRP (74 FR 23349, May 19, 2009) included a requirement that PLL vessel operators fishing in the Cape Hatteras Special Research Area must contact NOAA Fisheries at least 48 hours prior to a trip, and carry observers if requested. The PLTRP also established a 20 nm upper limit on mainline length for all PLL sets in the mid-Atlantic Bight (MAB), and required that an informational placard be displayed in the wheelhouse and on the working deck of all active PLL vessels in the Atlantic fishery.

Permits

The 1999 FMP established six different limited access permit (LAP) types: (1) directed swordfish, (2) incidental swordfish, (3) swordfish handgear, (4) directed shark, (5) incidental shark, and (6) Atlantic tunas longline. To reduce bycatch in the PLL fishery, these permits were designed so that the swordfish directed and incidental permits are valid only if the permit holder also holds both a tuna longline and a shark permit. Similarly, the tuna longline permit is valid only if the permit holder also holds both a swordfish (directed or incidental, not handgear) and a shark permit. This allows limited retention of species that might otherwise have been discarded.

As of October 2009, approximately 259 tuna longline limited access permits had been issued. In addition, approximately 187 directed swordfish limited access permits, 72 incidental

swordfish limited access permits, 223 directed shark limited access permits, and 285 incidental shark limited access permits had been issued (see Chapter 8 for more information on permits). Vessels with limited access swordfish and shark permits do not necessarily use PLL gear, but these are the only permits that allow for the use of PLL gear in HMS fisheries.

The Atlantic tunas longline permit has historically been issued using separate procedures than swordfish and shark limited access permits. In 2010, the procedures for issuing these permits will be made consistent by consolidating all operations with the SERO permits office in St. Petersburg, Florida. This will streamline the PLL permitting process, and be more efficient to administer. Also, NMFS is currently developing Amendment 3 to the Consolidated HMS FMP. In the amendment, an alternative has been proposed to implement a federal permit requirement for smooth dogfish (74 FR 36892, July 24, 2009). NMFS is reviewing comments received on the proposed rule and expects to publish a final rule in mid to late spring of 2010.

Monitoring and Reporting

PLL fishermen and the dealers who purchase Atlantic HMS from them are subject to reporting requirements. NMFS has extended dealer reporting requirements to all swordfish importers as well as dealers who buy domestic swordfish from the Atlantic. These data are used to evaluate the impacts of harvesting on the stock and the impacts of regulations on affected entities.

Commercial HMS fisheries are monitored through a combination of vessel logbooks, dealer reports, port sampling, cooperative agreements with states, and scientific observer coverage. Logbooks contain information on fishing vessel activity, including dates of trips, number of sets, area fished, number of fish, and other marine species caught, released, and retained. In some cases, social and economic data such as volume and cost of fishing inputs are also required.

PLL Observer Program

During 2008, NMFS observers recorded 1,190 PLL sets for an overall fishery coverage of 13.6 percent (Garrison, Stokes, and Fairfield 2009). Table 4.3 details the amount of observer coverage in past years for this fleet. For a variety of reasons, it has not always been possible to place observers on all selected trips. NMFS is working toward improving compliance with observer requirements and facilitating communication between vessel operators and observer program coordinators. In addition, fishermen have been reminded of the safety requirements for the placement of observers on vessels specified at 50 CFR 600.746, and the need to have all safety equipment on board as required by the U.S. Coast Guard.

In the PLTRP (74 FR 23349, May 19, 2009), it was recommended that NMFS increase observer coverage to 12 to 15 percent throughout all Atlantic pelagic longline fisheries that interact with pilot whales and Risso's dolphins to ensure representative sampling of fishing effort. If resources are not available to provide such observer coverage for all fisheries, regions, and seasons, the PLTRT recommended NMFS allocate observer coverage to fisheries, regions, and seasons with the highest observed or reported bycatch rates of pilot whales. The PLTRT

recommended that additional coverage be achieved either by increasing the number of NMFS observers who have been specially trained to collect additional information supporting marine mammal research, or by designating and training special "marine mammal observers'' to supplement traditional observer coverage.

Table 4.3 Observer Coverage of the Pelagic Longline Fishery. Source: Yeung, 2001; Garrison, 2003b; Garrison and Richards, 2004; Garrison, 2005; Fairfield-Walsh and Garrison, 2006; Fairfield-Walsh & Garrison, 2007; Fairfield & Garrison, 2008; Garrison, Stokes & Fairfield, 2009.

Year	Number of Sets Observed			Percentage of Total Number of Sets		
1999	420			3.8		
2000	464			4.2		
2001*	Total	Non-NED	NED	Total	Non-NED	NED
	584	398	186	5.4	3.7	100.0
2002*	856	353	503	8.9	3.9	100.0
2003*	1,088	552	536	11.5	6.2	100.0
	Total	Non-EXP	EXP	Total	Non-EXP	EXP
2004**	702	642	60	7.3 %	6.7 %	100.0 %
2005**	796	549	247	10.1 %	7.2 %	100.0 %
2006	568	-	-	7.5 %	-	-
2007	944	-	-	10.8 %	-	-
2008	1,190	-	101***	13.6 %	-	100.0***

*In 2001, 2002, and 2003, 100 percent observer coverage was required in the NED research experiment.
** In 2004 and 2005 there was 100 percent observer coverage in experimental fishing (EXP).
*** In 2008, 100 percent observer coverage was required in experimental fishing in the FEC, Charleston Bump, and GOM, but these sets are not included in extrapolated bycatch estimates because they are not representative of normal fishing.

4.1.2 Recent Catch and Landings

U.S. PLL catch (including bycatch, incidental catch, and target catch) is largely related to vessel characteristics and gear configuration. The reported catch is summarized for the whole fishery in Table 4.4. Table 4.5 provides a summary of U.S. PLL landings, as reported to the International Commission for the Conservation of Atlantic Tunas (ICCAT). Additional information regarding U.S. landings and discards is available in the 2009 U.S. National Report to ICCAT (NMFS, 2009).

Table 4.4 Reported Catch of Species Caught by U.S. Atlantic PLLs, in Number of Fish, for 2001-2008. Source: PLL Logbook Data.

Species	2001	2002	2003	2004	2005	2006	2007	2008
Swordfish Kept	47,560	49,320	51,835	46,440	41,139	38,241	45,933	42,800
Swordfish Discarded	13,993	13,035	11,829	10,675	11,134	8,900	11,823	11,194
Blue Marlin Discarded	635	1,175	595	712	567	439	611	687
White Marlin Discarded	848	1,438	809	1,053	989	557	744	670
Sailfish Discarded	356	379	277	424	367	277	321	506
Spearfish Discarded	137	148	108	172	150	142	147	197
Bluefin Tuna Kept	177	178	273	475	375	261	337	343
Bluefin Tuna Discarded	348	585	881	1,031	765	833	1,345	1,417
Bigeye, Albacore, Yellowfin, Skipjack Tunas Kept	80,466	79,917	63,321	76,962	57,132	73,058	70,390	50,108
Pelagic Sharks Kept	3,460	2,987	3,037	3,440	3,149	2,098	3,504	3,500
Pelagic Sharks Discarded	23,813	22,828	21,705	25,355	21,550	24,113	27,478	28,786
Large Coastal Sharks Kept	6,478	4,077	5,326	2,292	3,362	1,768	546	115
Large Coastal Sharks Discarded	4,836	3,815	4,813	5,230	5,877	5,326	7,133	6,732
Dolphin Kept	27,586	30,384	29,372	38,769	25,707	25,658	68,124	43,511
Wahoo Kept	3,068	4,188	3,919	4,633	3,348	3,608	3,073	2,571
Turtle Interactions	424	465	399	369	152	128	300	476
Number of Hooks (x 1,000)	*7,564*	*7,150*	*7,008*	*7,276*	*5,911*	*5,662*	*6,291*	*6,498*

Table 4.5 Reported Landings in the U.S. Atlantic Pelagic Longline Fishery (in mt ww) for 2000-2008. Source: NMFS ICCAT National Report 2009.

Species	2000	2001	2002	2003	2004	2005	2006	2007	2008
Yellowfin Tuna	2,901.0	2,201.0	2,573.0	2,164.0	2,492.2	1,746.2	2,009.9	2,394.5	1,324.5
Skipjack Tuna	1.8	4.3	2.5	1.4	0.7	0.6	0.2	0.0	1.5
Bigeye Tuna	531.9	682.4	535.8	283.9	310.1	311.9	520.6	380.7	407.7
Bluefin Tuna*	66.1	37.5	49.9	133.9	180.1	211.5	204.6	164.3	247.8
Albacore Tuna	147.3	193.8	155.0	107.6	120.4	108.5	102.9	126.8	117.9

Species	2000	2001	2002	2003	2004	2005	2006	2007	2008
Swordfish N.*	3,315.8	2,483.0	2,598.8	2,756.3	2,518.5	2,272.8	1,960.8	2,474.0	2,353.6
Swordfish S.*	143.8	43.2	199.9	20.5	15.7	0.0	0.0	0.0	0.0

* Includes landings and estimated discards from scientific observer and logbook sampling programs.

In recent years there has been concern regarding the amount of swordfish that the U.S. has been landing, as it has been well below the ICCAT-recommended quota. To address this concern, NOAA Fisheries has taken a number of steps to modify swordfish management measures as the north Atlantic swordfish stock has rebuilt. In 2007, a final rule was published (72 FR 31688, June 7, 2007) to change PLL vessel upgrading requirements, increase incidental swordfish landing limits, and increase recreational (Angling and Charter/Headboat) landing limits. Additionally, NOAA Fisheries implemented regulations in 2008 (73 FR 38144, July 3, 2008) to allow Atlantic tunas longline permits that had been expired for more than one year to be renewed. This action enabled some PLL fishermen to renew permits which previously could not be renewed for technical reasons, because they did not have a vessel to assign the permit to. Finally, a limited experimental PLL fishery is currently authorized in the Florida East Coast and Charleston Bump PLL closed areas to examine catch and bycatch rates in these areas.

In the U.S. pelagic longline fishery, fish may be discarded for a variety reasons. Swordfish, yellowfin tuna, and bigeye tuna may be discarded because they are undersized or unmarketable (*e.g.*, bitten by sharks). Blue sharks, as well as other species, are discarded because of limited markets (resulting in low prices) and perishability of the product. Large coastal sharks are discarded when the shark season is closed. Bluefin tuna may be discarded because target catch requirements for other species have not been met. Also, all billfish are required to be released. In the past, swordfish have been discarded when the swordfish season was closed.

From 1992 through 2004, the Pelagic Observer Program (POP) recorded a total of 86,485 elasmobranchs (29 percent of the total catch) caught by U.S. PLL vessels targeting tunas and swordfish (Keene, *et al*., 2007). Of the 42 elasmobranch species observed, blue sharks were numerically dominant (67.3 percent of the total elasmobranch catch), with blue, silky, dusky, shortfin mako, porbeagle, unidentified sharks, and skates/rays making up the majority (90.5 percent).

At this time, the direct use of observer data with pooling for estimating dead discards in the PLL fishery represents the best scientific information available for use in stock assessments. Direct use of observer data has been employed for a number of years to estimate dead discards in Atlantic and Pacific longline fisheries, including billfish, sharks, and undersized swordfish. Furthermore, the data have been used for scientific analyses by both ICCAT and the Inter-American Tropical Tuna Commission for a number of years.

Bycatch mortality of marlins, sailfish, swordfish, and bluefin tuna from all fishing nations may significantly reduce the ability of these populations to rebuild, and it remains an important management issue. In order to minimize bycatch and bycatch mortality in the domestic PLL fishery, NMFS implemented regulations to close certain areas to this gear type (Figure 4.3) and has banned the use of live bait by PLL vessels in the Gulf of Mexico.

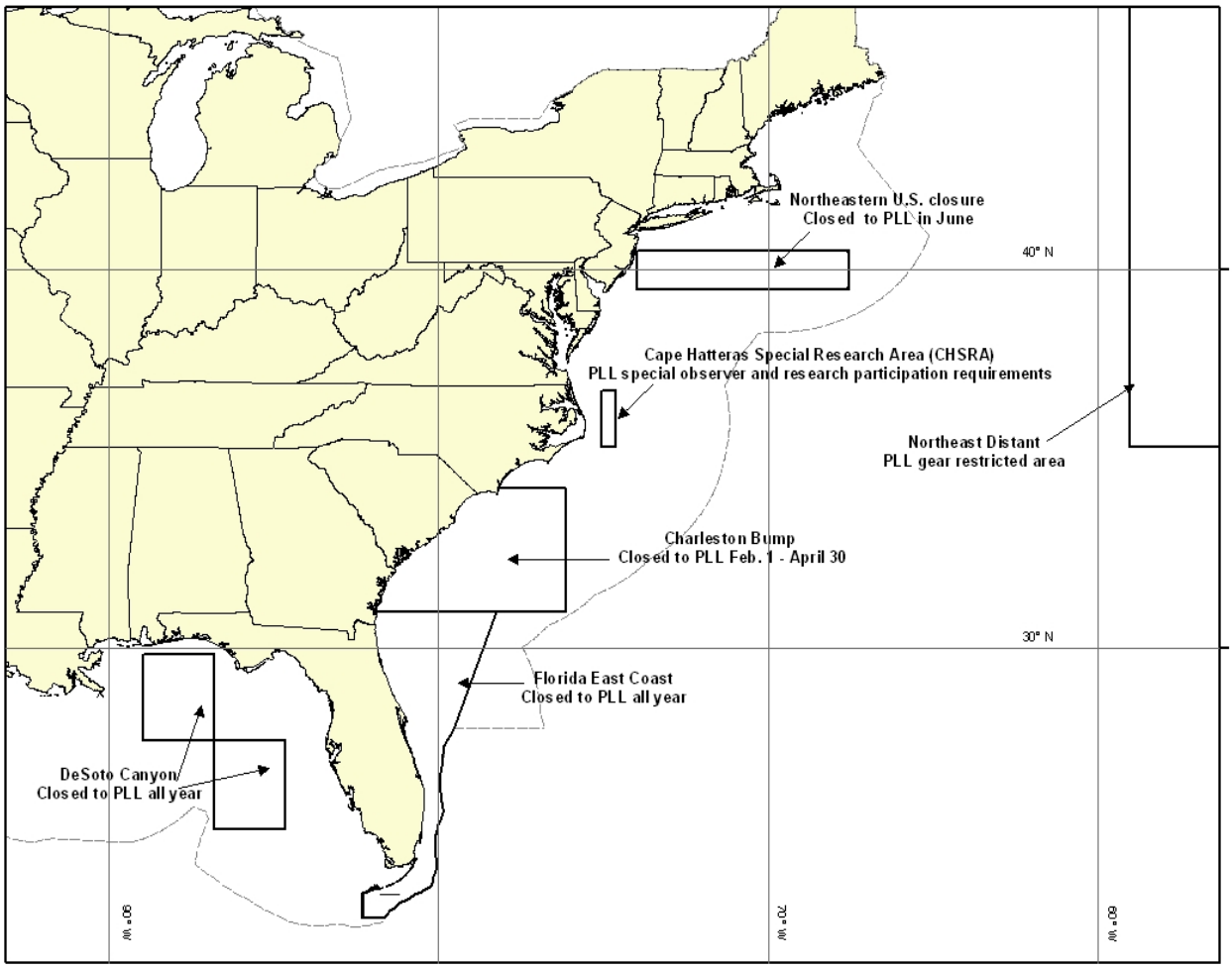

Figure 4.3 Areas Closed to Pelagic Longline Fishing by U.S. Flagged Vessels

4.1.3 International Issues and Catch

PLL fisheries for Atlantic HMS primarily target swordfish and tunas. Directed PLL fisheries in the Atlantic have been operated by Spain, the United States, and Canada since the late 1950s or early 1960s. The Japanese PLL tuna fishery started in 1956 and has operated throughout the Atlantic since then (NMFS, 1999). Most of the 46 other ICCAT parties now also operate PLL vessels.

ICCAT generally establishes management recommendations on a species (*e.g.*, swordfish) or issue basis (*e.g.*, data collection) rather than by gear type. For example, ICCAT typically establishes quotas or landing limits by species, not gear type. In terms of data collection, ICCAT may require the use of specific collection protocols or specific observer coverage levels in certain fisheries or on vessels of a certain size, but these are usually applicable to all gears, and are not specific to any one gear type. However, there are a handful of management recommendations

that are specifically applicable to the international PLL fishery. These include, a prohibition on longlining in the Mediterranean Sea in June and July by vessels over 24 meters in length, a prohibition on PLL fishing for bluefin tuna in the Gulf of Mexico, and mandated reductions in Atlantic white and blue marlin landings for PLL and purse seine vessels from specified levels, among others.

Because most ICCAT management recommendations pertain to individual species or issues, as discussed above, it is often difficult to obtain information specific to the international PLL fishery. For example, a discussion of the authorized TAC for specific species in this section of the document would be of limited utility because it is not possible to identify what percentage of quotas are allocated to PLL. Division of quota, by gear type, is typically done by individual countries.

Nevertheless, ICCAT does report landings by gear type. Available data indicate that longline effort produces the second highest volume of catch and effort, and is the most broadly distributed (longitudinally and latitudinally) of the gears used to target ICCAT managed species (SCRS, 2004b). Purse seines produce the highest volume of catch of ICCAT managed species from the Atlantic (SCRS, 2004b). Figure 4.4 shows the aggregate distribution of hooks from all fishing fleets from 2000-2007. In 2008, international longline landings of HMS in fisheries in which the U.S. participated totaled 94,084 mt, which represented a continuation of the generally decreasing trend since 1999.

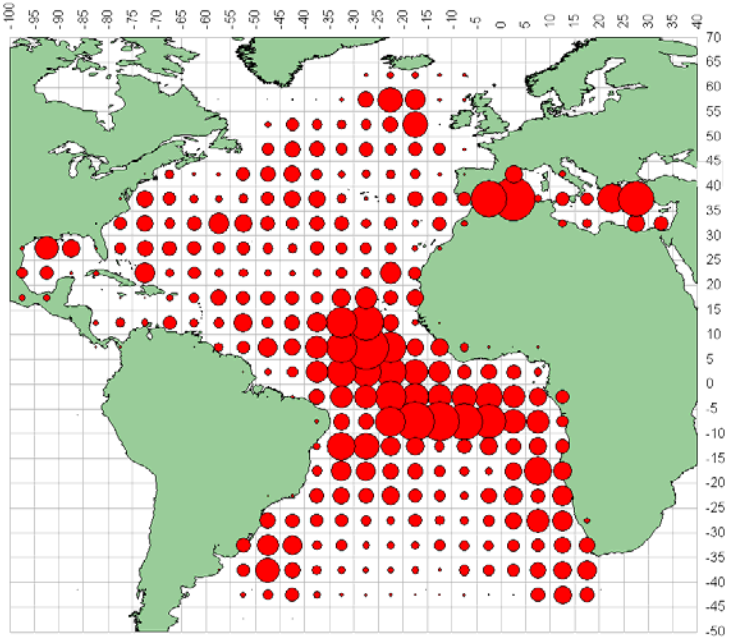

Figure 4.4 Aggregate Distribution of Hooks Deployed by All ICCAT Parties 2000-2006. Source: SCRS, 2008**.**

Scientific observer data are being collected on a range of PLL fleets in the Atlantic and will be increasingly useful in better quantifying total catch, catch composition, and disposition of catch as these observer programs mature. Previous ICCAT observer coverage requirements of

five percent for non-purse seine vessels that participated in the bigeye and yellowfin tuna fishery, including PLL (per ICCAT Recommendation 96-01), are no longer in force. There is currently no ICCAT required minimum level of observer coverage specific to PLL fishing. Nevertheless, the United States has implemented a mandatory observer program in the U.S. PLL fishery. Japan is required to have eight percent observer coverage of its vessels fishing for swordfish in the North Atlantic, which are primarily PLL vessels; however, the recommendation is not specific to vessel or gear type. ICCAT recommendation 04-01, a conservation and management recommendation for the bigeye tuna fishery, requires at least five percent observer coverage of PLL vessels over 24 meters participating in that particular fishery.

Highly Migratory Species

The U.S. PLL fleet represents a small fraction of the international PLL fleet that competes on the high seas for catches of tunas and swordfish. In recent years, the proportion of U.S. PLL landings of HMS, for the fisheries in which the United States participates, has remained relatively stable in proportion to international landings. Historically, the U.S. fleet has accounted for less than 0.5 percent of the landings of swordfish and tuna from the Atlantic Ocean south of 5° N. Lat. and does not operate at all in the Mediterranean Sea. Tuna and swordfish landings by foreign fleets operating in the tropical Atlantic and Mediterranean are greater than the catches from the north Atlantic area where the U.S. fleet operates. Within the area where the U.S. longline fleet operates, U.S. longline landings still represent a limited fraction of total landings. In recent years (2000-2008), U.S. longline landings have averaged 4.8 percent of total Atlantic longline landings, ranging from a high of 5.5 percent in 2002 to a low of 4.3 percent in 2001. Table 4.6 contains aggregate longline landings of HMS, other than sharks, for all countries in the Atlantic for the period 2000-2008.

Table 4.6 Estimated International Longline Landings of HMS, Other than Sharks, for All Countries in the Atlantic: 2000-2008 (mt ww). Source: SCRS, 2009; U.S. ICCAT National Reports 2003 – 2009.

	2000	2001	2002	2003	2004	2005	2006	2007	2008
Swordfish (N. Atl + S. Atl)	25,090	22,727	22,240	21,700	23,878	24,413	24,563	26,457	20,736
Yellowfin Tuna (W. Atl)[2]	15,760	14,872	11,921	10,166	16,019	14,449	14,288	13,292	12,078
Bigeye Tuna	71,193	55,265	46,438	54,466	48,396	38,035	34,182	46,232	41,704
Bluefin Tuna (W. Atl.)[2]	858	610	730	186	644	425	565	420	606
Albacore Tuna (N. Atl + S. Atl)	31,719	35,411	27,851	28,325	21,652	19,888	22,963	18,324	15,785
Skipjack Tuna (W. Atl)[2]	22	60	349	95	206	207	286	52	38

	2000	2001	2002	2003	2004	2005	2006	2007	2008
Blue Marlin (N. Atl. + S. Atl.)[3]	2,694	1,908	1,309	1,679	1,362	1,563	1,212	1,784	1,823
White Marlin (N. Atl. + S. Atl.)[3]	1,202	779	722	590	522	530	318	354	334
Sailfish (W. Atl.)[4]	811	1,002	1,303	883	757	1,083	663	723	979
Total International Longline Landings (from SCRS, 2009)	**149,349**	**132,634**	**112,863**	**118,090**	**113,436**	**100,593**	**99,040**	**107,638**	**94,083**
Total U.S. Longline Landings (from 2003-2009 U.S. Natl. Reports) [5]	**7,254**	**5,695**	**6,194**	**5,509**	**5,638**	**4,652**	**4,799**	**5,540**	**4,453**
U.S. Longline Landings as a Percent of Total International Longline Landings	**4.8 %**	**4.3 %**	**5.5%**	**4.7 %**	**5.0 %**	**4.6 %**	**4.8 %**	**5.1 %**	**4.7 %**

[1]Landings include those classified by the SCRS as longline landings.
[2]Note that the United States has not reported participation in the E. Atl yellowfin tuna fishery since 1983 and has not participated in the E. Atl bluefin or the E. Atl skipjack tuna fishery since 1982.
[3]Includes U.S. *dead discards and Brazilian live discards.*
[4]Includes U.S. *dead discards.*
[5]Includes swordfish, blue marlin, white marlin, and sailfish longline discards.

Atlantic Sharks

Stock assessments and data collection for international shark fisheries have improved in recent years due to increased reporting requirements adopted by ICCAT. Specifically, in 2004, ICCAT adopted Recommendation 04-10, which required ICCAT Contracting Parties (CPCs) to report Task I and Task II data for catches of sharks in accordance with ICCAT data reporting procedures to improve stock assessments. Recommendation 04-10 also banned shark finning, required vessels to fully utilize their entire catches of sharks, and encouraged the release of live sharks caught incidentally and not used for food. Recommendation 06-10 called for ICCAT's Standing Committee for research and Statistics (SCRS) to conduct stock assessments and recommend management alternatives for Atlantic blue sharks and shortfin mako sharks in time for consideration at the 2008 annual ICCAT meeting. Recommendation 07-06 called for the SCRS to conduct stock assessments and recommend management alternatives for porbeagle sharks, for Contracting Parties to take appropriate measures to reduce fishing mortality on porbeagles and North Atlantic shortfin mako sharks, and to implement research on pelagic shark species to identify nursery areas. It also required that Contracting Parties, Cooperating non-Contracting Parties, Entities, and Fishing Entities submit Task I and II data for sharks in advance of the next SCRS assessment.

In 2008, the SCRS assessed blue sharks and shortfin mako sharks. The SCRS concluded that blue sharks were not overfished or experiencing overfishing, and that shortfin mako sharks were at or slightly below levels that could support MSY with widely varying estimates of fishing mortality (0.48 to 3.77). At the 2008 meeting, ICCAT adopted Recommendation 08-07, which required the live release of bigeye thresher sharks that are brought to the boat alive, and required reporting bycatch and live releases of bigeye thresher sharks. Additionally, in 2008, ICCAT adopted Resolution 08-08 concerning porbeagle shark. Section 1.2 provides a summary of 2009 ICCAT actions regarding shark species.

In response to Resolution 08-08, an assessment of porbeagle sharks was conducted jointly with the International Council for the Exploration of the Seas (ICES) in 2009. The SCRS attempted to assess the four porbeagle stocks in the Atlantic Ocean: Northwest, Northeast (including the Mediterranean), Southwest and Southeast. In general, data for southern hemisphere porbeagle were too limited to provide a robust indication on the status of the stocks. For the Southwest, the assessment models suggested a potential decline in porbeagle abundance to levels below MSY and fishing mortality rates above those producing MSY, but the data were generally too limited to allow definition of sustainable harvest levels. For the Southeast, the data were too limited to assess their status. Available catch rate patterns suggest stability in the porbeagle stock since the early 1990s in the Southeast, but this trend cannot be viewed in a longer term context and thus are not informative on current levels relative to B_{MSY}.

The Northeast Atlantic porbeagle stock has the longest history of commercial exploitation, but there is considerable uncertainty in identifying the current status relative to virgin biomass. Exploratory assessments indicate that current biomass is below B_{MSY} and that recent fishing mortality is near or above F_{MSY}. Recovery of this stock to B_{MSY} under no fishing mortality is estimated to take 15-34 years. The current European Community (EC) total allowable catch (TAC) of 436 mt in effect for the Northeast Atlantic may allow the stock to remain stable, at its current depleted biomass level, under most credible model scenarios. Catches close to the current TAC (*e.g.* 400 mt) could allow rebuilding to B_{MSY} under some model scenarios, but with a high degree of uncertainty and on a time scale of approximately 60 years.

An update of the Canadian assessment of the Northwest Atlantic porbeagle stock indicated that biomass is depleted to well below B_{MSY}, but recent fishing mortality is below F_{MSY} and recent biomass appears to be increasing. The Canadian assessment projected that with no fishing mortality, the stock could rebuild to B_{MSY} level in approximately 20-60 years, whereas surplus-production based projections indicated 20 years would suffice. Under the Canadian strategy of a four percent exploitation rate, the stock is expected to recover in 30 to 100+ years according to the Canadian projections. Please see Chapter 2.0 for additional information on the status of Atlantic sharks.

The most recent catch totals for blue, shortfin mako, and porbeagle sharks are presented in Table 4.7.

Table 4.7 Estimated International Landings of Pelagic Sharks for All Countries in the Atlantic: 2000-2008 (mt ww)[1].
Source: SCRS, 2009

	2000	2001	2002	2003	2004	2005	2006	2007	2008
Blue Shark (N. Atl + S. Atl + MED)	37,608	33,436	31,121	34,591	34,687	41,743	39,071	46,014	53,234
Shortfin Mako (N. Atl + S. Atl + MED)	4,671	4,410	5,080	7,189	7,104	6,305	6,022	6,591	5,028
Porbeagle (N. Atl + S. Atl + MED)	1,469	1,000	849	647	745	572	508	515	606
Total International Catches	**43,748**	**38,846**	**37,050**	**42,427**	**42,536**	**48,620**	**45,601**	**53,120**	**58,868**
U.S. Blue Shark Catches[1]	428	148	68	1	72	68	47	55	137
U.S. Shortfin Mako Catches[1]	454	397	415	142	411	187	130	223	193
U.S. Porbeagle Catches[1]	1	1	1	0	1	0	0	0	1
Total U.S. Catches[1]	**883**	**546**	**484**	**143**	**484**	**255**	**177**	**278**	**331**
U.S. Catches[1] as a Percent of Total International Catches	**2.0 %**	**1.4 %**	**1.3 %**	**0.3 %**	**1.1 %**	**0.5 %**	**0.4 %**	**0.5 %**	**0.6 %**

[1] Includes catches and discards

Sea Turtles

Sea turtle bycatch in the U.S. PLL fishery has decreased significantly in the last decade. From 1999 to 2003, the U.S. PLL fleet targeting HMS interacted with an average of 772 loggerhead and 1,013 leatherback sea turtles per year, based on observed takes and total reported effort. In 2004, the U.S. PLL fleet was estimated to have interacted with 734 loggerhead and 1,359 leatherback sea turtles (Garrison, 2005). In 2005, the U.S. PLL fishery was estimated to have interacted with 274 loggerhead and 351 leatherback sea turtles outside of experimental fishing operations (Walsh and Garrison, 2006). During 2006, there were an estimated 561 interactions with loggerhead sea turtles and 415 interactions with leatherback sea turtles (Fairfield-Walsh and Garrison, 2007). In 2007, the U.S. PLL fishery was estimated to have interacted with 542 loggerhead sea turtles and 499 leatherback sea turtles (Fairfield and Garrison, 2008). In 2008, the U.S. PLL fishery was estimated to have interacted with 771 loggerhead sea turtles and 385 leatherback sea turtles (Garrison *et al*., 2009).

Although ICCAT adopted a resolution in 2003 (03-11) encouraging contracting parties, cooperating non-contracting parties, entities, or fishing entities to collect and provide the SCRS with all available information on sea turtle interactions in ICCAT fisheries, an exact assessment of basin-wide incidental catches is not available. However, high numbers of estimated sea turtle catches in foreign fleets have been described in other sources. Lewison, *et al*. (2004) estimated that a total of 210,000 – 280,000 loggerhead and 30,250 – 70,000 leatherback sea turtles were captured by pelagic longline fisheries each year throughout the Atlantic basin, including the Mediterranean Sea. More recently, a report by Lewison and Crowder (2007) indicates that applying bycatch rates to accurately estimate the number of turtles taken internationally by pelagic longline fleets is challenging because high variability in bycatch rates within and among fleets constrains the estimation. The report states that international sea turtle bycatch estimates are important, but given the high level of uncertainty, any precision beyond one or two significant digits is questionable. Given this caveat, Lewison and Crowder (2007) estimated that total annual sea turtle bycatch (all species) for pelagic longlines throughout the Atlantic basin, including the Mediterranean Sea, ranged from 28,180 to 39,080 interactions, which represents a notable decrease from 2004 estimates. The study suggested that pelagic longlines may not be the highest source of fishery-induced mortality but, because the gear interacts with older age classes, efforts to reduce sea turtle bycatch are warranted.

Mortality in the domestic PLL fisheries is just one of several factors affecting sea turtle populations in the Atlantic (National Research Council, 1990). Many sources of anthropogenic mortality are outside of U.S. jurisdiction and control. If the U.S. swordfish quota was relinquished to other fishing nations, the fishing effort now expended by the U.S. fleet would likely be replaced by foreign effort. This could affect future ICCAT discussions and make the implementation of international conservation efforts more difficult. This would also reduce the opportunity for gear-based conservation experimentation to continue with the U.S. longline fleet, thus making it difficult to find bycatch reduction solutions which can be transferred to other nations and effect a greater global reduction in sea turtle takes in pelagic longline fisheries. The United States has, and will continue to make efforts to encourage the adoption of sea turtle conservation measures by international fishing fleets.

In addition to domestic rulemaking in various fisheries, NMFS works to reduce sea turtle bycatch in domestic and international fisheries through collaborative research programs and coordinated education and recovery efforts in partnership with Regional Fishery Management Organizations (RFMOs) and other international bodies, governments, universities, private institutions, and local communities in relevant areas throughout the world. Among these activities, NMFS conducts joint research and holds workshops for fishers and fisheries managers on sea turtle handling, release, and resuscitation methods; sea turtle biology and species identification; and measures to mitigate sea turtle interactions.

The United States introduced the NED sea turtle bycatch mitigation research at the November 2003, ICCAT meeting in Dublin, Ireland. A poster and video describing the NED research experiment and preliminary results were displayed, as well as many of the experimentally tested release gears. At the annual ICCAT meeting in New Orleans in November 2004, NMFS staff conducted a workshop discussing experimental results and the use of circle hooks, the use of dehooking devices, and safe handling and release techniques. In June 2004, NMFS staff gave a presentation promoting cooperative research and the use of circle hooks at a Symposium on Bycatch Reduction hosted by the National Fisheries Research and Development Institute (NFRDI) in Korea.

The first Technical Assistance Workshop on Sea Turtle Bycatch Reduction Experiments in Longline Fisheries was held in April 2005, in Honolulu. This workshop was held to provide technical assistance for participants from the Food and Agriculture Organization (FAO) Technical Consultation Group to design programs for the development and testing of turtle bycatch reducing technology appropriate to the longline fisheries of participating nations.

At the Third International Fishers Forum (IFF) held in Yokahama, Japan in July 2005, and the Fourth IFF held in Coast Rica in 2007, the United States presented research results on sea turtle bycatch avoidance methods. In 2005, the United States assisted in designing experiments to evaluate sea turtle mitigation techniques and provided technical assistance for the following countries: Australia; Brazil; Costa Rica; Ecuador; Iceland; Italy; Japan; Korea; Taiwan; Mexico; Peru; Philippines; Spain; Uraquay; and, Vietnam.

From 2006 through 2008, NMFS funded and/or held numerous training and other cooperative programs regarding the protection and conservation of sea turtles in the Atlantic, including:

- A 2006 leatherback turtle research program in the Dominican Republic
- Provision of laminated cards with sea turtle ID and handling guidelines and a sea turtle safe handling video to numerous countries, including Brazil, Spain, Mexico, Uruguay, Italy, Costa Rica, and Indonesia (the guidelines have been translated into Spanish and Vietnamese)
- Cooperative research with Spain concerning loggerhead turtles hooked with longline hooks in the Azores
- Participation in a European technical meeting in June 2008 concerning bycatch in fisheries in the Canary Islands

- Work with Spanish field trials assisting with tests of bait type with regard to sea turtle capture rates, including planned future work to test circle hooks in a Spanish swordfish fishery
- Workshops on the use of circle hooks, dehookers and line cutters in artisanal and industrial longline fisheries in Morocco, in cooperation with the Universite Abdelmalek Essaadi, Department of Biology. Because Morocco's drift gill net fishery is changing to pelagic longline fishing, these were designed to teach techniques with sea turtle mitigation gear and circle hooks to ensure both the viability of the new fishery as well as protection for endangered and threatened sea turtles
- Assistance for research to reduce sea turtle bycatch in longline fisheries, coordinating field trials in Brazil, Uruguay, and Italy, including provision of satellite tags to Brazilian and Uruguayan longline observers to investigate the post-hooking survivorship of turtles after their release from fishing gear
- Training for Korean and Japanese representatives in sea turtle handling protocols used by NOAA Fisheries observers
- Work with Korean fisheries scientists on statistical analysis of data gained from bycatch reduction experiments
- Collaboration with World Wildlife Fund to test the use of circle hooks in both tuna and swordfish-directed fisheries in Italy

Working with the Department of State, NMFS has also conducted several programs involving technology transfer and training for the protection and conservation of Atlantic sea turtles, including:

- Transfer of sea turtle mitigation technology to Spain, Canada, Mexico, Italy, Uruguay, and Venezuela
- Provision of hooks designed to reduce sea turtle bycatch throughout Latin America

Many other outreach, education, and research projects have been conducted and/or funded by NMFS regarding sea turtle bycatch reduction in the Pacific Ocean.

4.2 Purse Seine

4.2.1 Current Management

Purse seine gear consists of a floated and weighted encircling net that is closed by means of a drawstring, known as a purseline, threaded through rings attached to the bottom of the net. The efficiency of this gear can be enhanced by the assistance of spotter planes used to locate schools of tuna. Once a school is spotted, the vessel, with the aid of a smaller skiff, intercepts and uses the large net to encircle it. Once encircled, the purseline is pulled, closing the bottom of the net and preventing escape. The net is hauled back onboard using a powerblock, and the tunas are removed and placed onboard the larger vessel. Economic and social aspects of the fisheries are described in Chapter 5.0 of this report.

A number of purse seine vessels targeted and landed bluefin off the coast of Gloucester, Massachusetts as early as the 1930s and purse seine vessels have participated in the U.S. Atlantic

tuna fishery continuously since the 1950s. In 1958, continued commercial purse seining effort for Atlantic tunas began with a single vessel in Cape Cod Bay, Massachusetts and expanded rapidly into the mid-Atlantic region between Cape Hatteras and Cape Cod during the early 1960s. The purse seine fishery between Cape Hatteras and Cape Cod was directed mainly at small and medium bluefin, yellowfin, and skipjack tuna primarily for the canning industry. North of Cape Cod, purse seining was directed at giant bluefin. High catches of juvenile bluefin were sustained throughout the 1960s and into the early 1970s. These high catch rates by U.S. purse seine vessels are believed to have played a role in the decline in abundance during subsequent years. Currently, these purse seine vessels focus their effort on giant bluefin, versus other tunas, due to the valuable international market that developed for giant bluefin in the late 1970s. These fresh caught bluefin are primarily flown directly to Japan for processing into sushi or sashimi. By the late 1980s, high ex-vessel prices and the increased importance of the Japanese market had increased effort on all size classes of bluefin. In 1992, NMFS responded by banning the sale of school, large school, and small medium bluefin (27 inches to less than 73 inches curved fork length).

A limited entry system with non-transferable individual vessel quotas (IVQs) for purse seining was established in 1982, effectively excluding any new entrants into this category. Equal baseline quotas of bluefin are assigned to individual vessels by regulation; the IVQ system is possible given the small pool of ownership in this sector of the fishery, *i.e*., five qualified participants. In 1996, the quotas were made transferable among the five entities provided they notified NMFS in writing.

Vessels participating in the Atlantic tunas purse seine fishery are required to target the larger size class bluefin, more specifically the giant size class (81 inches or larger) and are granted a tolerance limit for large medium size class bluefin (73 to less than 81 inches); *i.e*., large medium catch may not exceed 15 percent by weight of the total amount of giant bluefin landed during a season. These vessels may commence fishing starting on July 15 of each year and may continue through December 31, provided the vessel has not fully attained its IVQ. Over the last few years, the Purse Seine category has not fully harvested its allocated quota. This can be attributed to a number of different reasons outside of the industry's or NMFS' control, such as lack of availability, schools of mixed size classes, high operating costs, vessel sales, etc. NMFS has issued several exempted fishing permits to this sector of the fishery (to assist in archival tagging of bluefin and other research projects) and will continue to assess current regulations and their impact on providing reasonable opportunities to harvest available quota.

4.2.2 Recent Catch and Landings

Table 4.8 shows purse seine landings of Atlantic tunas from 1999 through 2008. Purse seine landings historically have made up approximately 20 percent of the total annual U.S. landings of bluefin (about 25 percent of total commercial landings), but recently only account for a small percentage. In the 1980s and early 1990s, purse seine landings of yellowfin were often over several hundred mt. Over 4,000 mt ww of yellowfin were recorded landed in 1985. In recent years, via informal agreements with other sectors of the tuna industry, the purse seine fleet has opted not to direct any effort on HMS other than bluefin.

Table 4.8 Domestic Atlantic Tuna Landings for the Purse Seine Fishery: 1999-2008 (mt ww). Northwest Atlantic Fishing Area. Source: U.S. National Report to ICCAT: 2009.

Species	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Bluefin Tuna	247.9	275.2	195.9	207.7	265.4	31.8	178.3	3.6	27.9	0
Yellowfin Tuna	0	0	0	0	0	0	0	0	0	0
Skipjack Tuna	0	0	0	0	0	0	0	0	0	0

4.2.3 International Issues and Catch

The U.S. purse seine fleet has historically accounted for a small percentage of the total international Atlantic tuna landings. Table 4.9 shows that over the past 10 years, the U.S. purse seine fishery has contributed to less than 0.15 percent of the total purse seine landings reported to ICCAT.

Table 4.9 Estimated International Purse Seine Atlantic Tuna Landings in the Atlantic and Mediterranean: 1999-2008 (mt ww). Source: SCRS, 2009.

Species	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Bluefin Tuna	15,884	17,617	17,520	18,748	17,922	19,895	23,524	20,356	22,978	12,641
Yellowfin Tuna	81,783	82,540	108,720	97,538	82,075	62,228	61,410	62,761	52,733	70,047
Skipjack Tuna	103,861	89,799	82,439	68,935	92,347	93,284	89,704	71,215	81,335	73,080
Bigeye Tuna	24,533	18,599	21,556	20,894	22,731	18,417	18,595	16,457	17,553	15,536
Albacore	239	249	289	158	998	724	949	3432	1289	169
Total	**226,300**	**208,804**	**230,524**	**206,273**	**216,073**	**194,548**	**194,182**	**174,221**	**175,888**	**171,473**
U.S. Total	**248**	**275**	**196**	**208**	**265**	**32**	**178**	**4**	**28**	**0**
U.S. Percentage	**0.11%**	**0.13%**	**0.08%**	**0.10%**	**0.12%**	**0.02%**	**0.09%**	**<0.01%**	**0.02%**	**0%**

Since 1999, ICCAT has continued to implement various types of restrictions and closures implemented in the Gulf of Guinea. The fish aggregating device (FAD) closure (which became mandatory in mid-1999) was in response to concern over catches of juvenile and undersize tunas by non-U.S. internationally flagged purse seiners relying on FADs. At the 2004 ICCAT meeting, ICCAT adopted a revised recommendation that removed the minimum size measure for

bigeye tuna and significantly changed the time area closure. This measure reduced the size of the closed area. The temporal coverage had also been reduced from three months to one month and instead of banning fishing on FADs, the measure established a complete fishing moratorium in the area by the surface fishery (bait boats and purse seines). The recommendation did not require that FADs be removed from the closed area during the month that surface fishing is not permitted.

4.3 Commercial Handgear

4.3.1 Current Management

Commercial handgears, including handline, harpoon, rod and reel, green-stick, buoy gear and bandit gear are often used to fish for Atlantic HMS by fishermen on private vessels, charter vessels, and headboat vessels. Rod and reel gear may be deployed from a vessel that is at anchor, drifting, or underway (*i.e.*, trolling). In general, trolling consists of dragging baits or lures through, on top of, or even above the water's surface. While trolling, vessels often use outriggers to assist in spreading out or elevating baits or lures and to prevent fishing lines from tangling. Green-stick gear is defined as an actively trolled mainline attached to a vessel and elevated or suspended above the surface of the water with no more than 10 hooks or gangions attached to the mainline. The suspended line, attached gangions and/or hooks, and catch may be retrieved collectively by hand or mechanical means. Operations, frequency and duration of trips, and distance ventured offshore vary widely. Most of the vessels are greater than seven meters in length and are privately owned by individual fishermen.

The handgear fisheries are typically most active during the summer and fall although in the South Atlantic and Gulf of Mexico fishing occurs during the winter months. Fishing usually takes place between eight and two hundred km from shore and for those vessels using bait, the baitfish typically includes herring, mackerel, whiting, mullet, menhaden, ballyhoo, butterfish, and squid. The commercial handgear fishery for bluefin occurs mainly in New England, and more recently off the coast of southern Atlantic states, such as Virginia, North Carolina, and South Carolina, with vessels targeting large medium and giant bluefin. The majority of U.S. commercial handgear fishing activities for bigeye, albacore, yellowfin, and skipjack tunas take place in the northwest Atlantic. Beyond these general patterns, the availability of Atlantic tunas at a specific location and time is highly dependent on environmental variables that fluctuate from year to year.

Currently, the U.S. Atlantic tuna commercial handgear fisheries are managed through an open access vessel permit program. Vessels that wish to sell their Atlantic tunas must obtain a permit in one of the following categories: General (handgears include rod and reel, harpoon, handline, bandit gear, and green-stick), Harpoon (harpoon only), or Charter/Headboat (rod and reel, handline, bandit gear, and green-stick). These vessels may also need permits from the states they operate from in order to land and sell their catch. All commercial permit holders are encouraged to check with their local state fish/natural resource management agency regarding these requirements. Permitted vessels are required to sell Atlantic tunas only to federally permitted Atlantic tuna dealers. Because the Atlantic tunas dealer permits are issued by the Northeast Region Permit Office, vessel owner/operators are encouraged to contact the permitting

office directly, either by phone at (978) 281-9438 or via the web at http://www.nero.noaa.gov/ro/doc/vesdata1.htm, to obtain a list of permitted dealers in their area.

Vessels that are permitted in the General and Charter/Headboat categories commercially fish under the General category rules and regulations. For instance, regarding bluefin, vessels that possess either of the two permits mentioned above have the ability to retain a daily bag limit of one to three bluefin (depending on the current retention limit authorized), measuring 73 inches or greater curved fork length per vessel per day while the General category bluefin fishery is open. The General category bluefin fishery opens on January 1 of each year and remains open until January 31. The fishery reopens on June 1 and remains open until December 31, or until the quota is filled. Vessel owner/operators should check with the agency via internet (http://www.hmspermits.gov) or telephone information lines (1-888-872-8862) to verify the bluefin retention limit on any given day. The General category receives approximately 47 percent of the U.S. bluefin quota.

Vessels that are permitted in the Harpoon category fish under the Harpoon category rules and regulations. For instance, regarding bluefin, vessels have the ability to keep two bluefin measuring 73 inches to less than 81 inches curved fork length per vessel trip per day while the fishery is open. There is no limit on the number of bluefin that can be retained measuring longer than 81 inches curved fork length, as long as the Harpoon category season is open. The Harpoon category season also opens on June 1 of each year and remains open until November 15, or until the quota is filled. The Harpoon category bluefin quota is approximately 3.9 percent of the U.S. quota.

U.S. commercial swordfish fishing in the Atlantic Ocean is reported to have begun in the early 1800s as a harpoon fishery off the coast of New England. This fishery traditionally consisted of harpoon vessels operating out of Rhode Island and Massachusetts where they took extended trips for swordfish north and east of Hudson Canyon and particularly off Georges Bank and could land as many as 20 to 25 large swordfish over a ten-day period. These fish primarily consisted of large fish that finned on the surface and were available to the harpoon gear, some weighing as much as 600 lbs dw, but averaging about 225 to 300 lbs dw at the turn of the century. Because of the limited effort directed towards large fish, the stock was sufficient to support a sustainable seasonal swordfish fishery for more than 150 years. Most swordfish caught in the United States in the early 1900s were harvested with harpoon. Harpoon landings declined from the 1940s through the 1960s. Due to a decreased availability of the large swordfish in the northeast this fishery has essentially ceased to exist. However, in recent years, a new commercial swordfish fishery utilizing handgear has developed off the east coast of Florida. For information regarding the commercial buoy gear fishery, refer to Section 4.7.

The shark commercial handgear fishery plays a very minor role in contributing to the overall shark landing statistics. For further information regarding the shark fishery refer to Sections 4.5 and 4.6. Economic and social aspects of all the domestic handgear fisheries are described later in this document (Chapter 5.0).

4.3.2 Recent Catch and Landings

The proportion of domestic HMS landings harvested with handgear varies by species, with Atlantic tunas comprising the majority of commercial landings. Commercial handgear landings of all Atlantic HMS (other than sharks) in the United States are shown in Table 4.10 and Table 4.11.

In 2008, bluefin commercial handgear landings accounted for approximately 27 percent of the total U.S. bluefin landings, and almost 77 percent of commercial bluefin landings.

Also in 2008, one percent of the total yellowfin catch, or three percent of the commercial yellowfin catch, was attributable to commercial handgear. Commercial handgear landings of skipjack tuna accounted for approximately 25 percent of total skipjack landings, or about 89 percent of commercial skipjack landings. For albacore, commercial handgear landings accounted for approximately less than one percent of total albacore landings, or about one percent of commercial albacore landings. Commercial handgear landings of bigeye tuna accounted for approximately one percent of total bigeye landings and two percent of total commercial bigeye landings. Updated landings for the commercial handgear fisheries by gear and by area for 1999 – 2008 are presented in the following tables.

Table 4.10 Domestic Atlantic Landings for the Commercial Handgear Fishery, by Species and Gear, for 1999-2008 (mt ww). Source: U.S. National Report to ICCAT: 2009.

Species	Gear	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Bluefin Tuna	Rod and Reel	643.6	590.9	889.7	878.5	529.2	353.2	226.6	164.1	120.8	226.6
	Handline	15.5	3.2	9.0	4.5	2.5	1.5	2.3	0.3	0.0	0.6
	Harpoon	115.8	184.2	102.1	55.6	87.9	41.2	31.5	30.3	22.5	30.2
	TOTAL	**774.9**	**778.3**	**1,000.8**	**938.6**	**619.6**	**395.9**	**260.4**	**194.7**	**143.3**	**257.4**
Bigeye Tuna	Troll	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.8
	Handline	12.3	5.7	33.7	14.4	6.3	3.5	6.3	23.0	16.8	6.9
	TOTAL	**12.3**	**5.7**	**33.7**	**14.4**	**6.3**	**3.5**	**6.3**	**23.0**	**17.7**	**7.7**
Albacore Tuna	Troll	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2
	Handline	4.4	7.9	3.9	6.6	4.3	8.2	4.2	3.1	5.6.	0.6
	TOTAL	**4.4**	**7.9**	**3.9**	**6.6**	4.3	8.2	4.2	3.1	5.8	0.8
Yellowfin Tuna	Troll	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.9	2.4
	Handline	220.0	284.0	300.0	244.0	199.7	248.5	160.3	162.8	148.5	45.0
	TOTAL	**220.0**	**284.0**	**300.0**	**244.0**	199.7	248.5	160.3	162.8	155.4	47.4
Skipjack Tuna	Troll	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Handline	6.4	9.7	10.5	12.7	13.1	10.4	11.8	10.2	14.2	16.5

Species	Gear	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
	TOTAL	**6.4**	**9.7**	**10.5**	**12.7**	13.1	10.4	11.8	10.2	14.2	16.5
Swordfish	Handline	5.0	8.9	8.9	11.7	20.6	22.7	34.7	32.6	125.4	84.4
	Harpoon	0.0	0.6	7.4	2.8	0.0	0.5	0.0	0.3	0.0	0.0
	TOTAL	**5.0**	**9.5**	**16.3**	**14.5**	**20.6**	**23.2**	**34.7**	**32.9**	**125.4**	**84.4**

Table 4.11 Domestic Landings for the Commercial Handgear Fishery by Species and Region for 1999-2008 (mt ww). Source: U.S. National Report to ICCAT: 2009.

Species	Region	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Bluefin Tuna	NW Atl	774.4	778.3	1,000.8	938.3	607.3	395.6	260.4	194.7	143.3	257.3
Bigeye Tuna	NW Atl	11.9	4.1	33.2	13.8	6.0	3.3	6.2	21.5	17.7	7.7
	GOM	0.2	0.1	0.5	0.6	0.3	0.2	0.1	1.5	1.2	0.0
	Caribbean	0.2	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Albacore Tuna	NW Atl	0.6	2.9	1.7	3.9	1.7	6.1	3.0	2.6	5.6	0.4
	GOM	$\leq$ .05	0.0	0.0	0.0	$\leq$ .05	0.0	0.1	0.1	0.2	0.0
	Caribbean	3.8	5.0	2.2	2.7	2.6	2.1	1.1	0.4	0.2	0.4
Yellowfin Tuna	NW Atl	192.0	235.7	242.5	137.0	149.1	213.2	105.1	105.1	120.1	32.5
	GOM	12.7	28.6	43.4	100.0	39.9	28.3	45.5	49.9	26.2	11.2
	Caribbean	14.5	19.4	14.3	7.0	10.7	7.0	9.7	7.8	9.1	3.7
Skipjack Tuna	NW Atl	0.2	0.2	0.2	0.2	0.2	0.6	0.9	0.2	0.3	0.4
	GOM	0.4	0.7	0.0	0.0	0.0	0.2	0.0	0.0	0.2	$\leq$ .05
	Caribbean	5.8	8.8	10.3	12.5	12.9	9.6	12.9	10.0	13.7	16.0
Swordfish	NW Atl	5.0	8.3	16.0	11.6	10.8	19.2	34.4	32.8	125.2	83.2
	GOM	$\leq$ .05	1.2	0.3	2.9	9.8	4.0	0.3	0.1	0.2	1.2

Handgear Trip Estimates

Table 4.12 displays the estimated number of rod and reel and handline trips targeting large pelagic species, from Maine through Virginia, in 2001 through 2008. The trips include commercial and recreational trips, and are not specific to any particular species. It should be noted that these estimates are still preliminary and subject to change.

Table 4.12 Estimated number of vessel trips targeting Atlantic large pelagic species, 2001-2008. Source: Large Pelagics Survey database.

Year	AREA							Total
	NH/ME	MA	CT/RI	NY	NJ (north)	NJ (south) + MD/DE	VA	
Private Vessels								
2001	1,944	3,641	497	2,039	3,040	2,675	910	14,746
2002	5,090	15,180	2,558	7,692	2,762	22,757	6,524	62,563
2003	4,501	13,411	2,869	12,466	3,214	21,619	5,067	63,147
2004	2,025	10,033	3,491	11,525	3,632	22,433	4,406	57,545
2005	4,607	12,052	7,603	8,051	2,446	19,759	4,631	59,148
2006	3,303	24,951	5,430	11,114	3,043	19,187	5,274	72,302
2007	5,929	25,139	6,020	6,809	5,875	17,712	5,012	72,496
2008	3,873	19,157	3,546	7,587	3,099	15,807	3,081	56,150
Charter Vessels								
2001	133	567	203	280	660	655	307	2,805
2002	1,132	3,357	937	1,686	1,331	6,300	1,510	16,253
2003	221	2,561	1,246	2,035	1,331	5,201	546	13,141
2004	312	2,021	1,564	2,285	1,094	5,080	1,579	13,935
2005	329	2,397	551	2,033	1,024	3,476	763	10,573
2006	96	1,294	677	1,057	891	3,452	828	8,296
2007	789	4,073	1,141	1,445	1,420	4,579	610	14,057
2008	892	3,295	751	1,525	1,026	4,340	370	12,199

4.4 Recreational Handgear

The following section describes the recreational portion of the handgear fishery and is primarily focused upon rod and reel fishing.

4.4.1 Current Management

Atlantic HMS are all targeted by domestic recreational fishermen using rod and reel gear. Since March 1, 2003, an HMS Angling category permit has been required to fish recreationally for any HMS-managed species (67 FR 77434, December 18, 2002). Prior to March 1, 2003, the regulations only required vessels fishing recreationally for Atlantic tunas to possess an Atlantic Tunas Angling category permit. On January 7, 2003, a final rule establishing a mandatory reporting system for all non-tournament recreational landings of Atlantic marlins, sailfish, and swordfish was published in the Federal Register (68 FR 711). The reporting requirement became effective in March 2003. All HMS fishing tournaments are required to register with NMFS at least four weeks prior to the commencement of tournament fishing activities. If selected, tournament operators are required to report the results of their tournament to the NMFS Southeast Fisheries Science Center.

Recreational fishing for Atlantic HMS is managed primarily through the use of minimum size limits and retention limits. Recreational tuna fishing regulations are complex and include a combination of minimum sizes, bag limits, limited season-based quota allotment for bluefin tuna, and reporting requirements (depending upon the particular species and vessel type).

The recreational swordfish fishery is managed through the use of a minimum size limit, trip-based retention limits, and landing requirements (swordfish may be headed and gutted but may not be cut into smaller pieces). For whole (head on) North Atlantic swordfish, the minimum size is 47 in (119 cm) lower jaw fork length (LJFL). If the head or tail of the swordfish has been removed prior to landing, a minimum size of 29 in (73 cm) from cleithrum to caudal keel, or a 33 lb (15 kg) minimum dressed weight shall be applied in all cases. Recreational anglers may not land South Atlantic swordfish (south of 5° N latitude). Effective July 9, 2007 (72 FR 31688, June 7, 2007) recreational swordfish retention limits were modified for HMS Angling and Charter/Headboat (Charter/Headboat) permit holders. Vessel owners issued an HMS Angling category permit may retain one swordfish per person, up to four swordfish per vessel/trip. Vessel owners operating a charter vessel and issued a HMS Charter/Headboat permit may retain one swordfish per paying passenger and up to six swordfish per vessel/trip. Vessel owners operating a headboat vessel and issued a HMS Charter/Headboat permit may retain one swordfish per paying passenger and up to fifteen swordfish per vessel/trip.

The recreational shark fishery is managed using bag limits, minimum size requirements, and landing requirements (sharks must be landed with head and fins naturally attached). Additionally, the possession of 21 species of sharks is prohibited. Recreational fishermen are allowed to keep non-ridgeback large coastal sharks, tiger sharks, pelagic sharks, and small coastal sharks. As of July 24, 2008, recreational fishermen have been prohibited from keeping sandbar or silky sharks. In July 2009, NMFS published Draft Amendment 3, which, if finalized, would also prohibit the recreational retention of blacknose sharks. NMFS is currently reviewing comments received on that rule and expects to have a final rule issued in mid to late spring 2010.

Atlantic blue and white marlin have a combined annual landings limit (*i.e.*, a maximum of 250 fish that can be landed per year); however, the primary management strategy for the recreational billfish fishery is through the use of minimum size limits. For blue marlin, white marlin, and sailfish, the LJFL minimum sizes are 99 in (251 cm), 66 in (168 cm), and 63 in (160 cm), respectively. There are no recreational retention limits for Atlantic sailfish, blue marlin, and white marlin. Recreational anglers may not land longbill spearfish.

4.4.2 Recent Catch, Landings and Bycatch

The recreational landings database for Atlantic HMS consists of information obtained through surveys including the Marine Recreational Fishery Statistics Survey (MRFSS), Large Pelagic Survey (LPS), Southeast Headboat Survey (HBS), Texas Headboat Survey, Recreational Billfish Survey (RBS) tournament data, and the Recreational non-tournament swordfish and billfish landings database. Descriptions of these surveys, the geographic areas they include, and their limitations, were discussed in Section 2.6.2 of the 1999 FMP and Section 2.3.2 of the 1999 Billfish Amendment.

Historically, fishery survey strategies (including the MRFSS, LPS, and RBS) have not captured all landings of recreationally-caught swordfish. Although some swordfish handgear fishermen have commercial permits[1], many others land swordfish strictly for personal consumption. Therefore, NMFS has implemented regulations to improve recreational swordfish and billfish monitoring and conservation. These regulations stipulate that all non-tournament recreational landings of swordfish and billfish must be reported by phone at (800) 894-5528 or web portal at http://www.hmspermits.gov. All reported recreational swordfish landings are counted against the incidental swordfish quota.

Reported domestic landings of Atlantic bluefin tuna (1983 through 1998) and BAYS tuna (1995 through 1997) were presented in Section 2.2.3 of the 1999 FMP. Updated landings for all recreational rod and reel fisheries are presented below in Table 4.13 from 2001 through 2008. Recreational landings of swordfish are monitored by the LPS, MRFSS, RBS, and mandatory recreational reporting requirements via http://www.hmspermits.gov.

An ad hoc committee of NMFS scientists reviewed the methodology and data used to estimate recreational landings of Atlantic HMS during 2004. The committee was charged with reviewing the 2002 estimates of U.S. recreational landings of bluefin tuna, white marlin and blue marlin reported by NMFS to ICCAT. The committee was also charged with recommending methods to be used for the estimation of 2003 recreational fishery landings of bluefin tuna and marlin. Although the committee discovered and corrected a few problems with the raw data from the LPS and the estimation program used to produce the estimates, the committee concluded that the estimation methods for producing the 2002 estimates were consistent with methods used in previous years. The Committee's report is available at: http://www.nmfs.noaa.gov/sfa/hms/Tuna/2002-2003_Bluefin-Marlin_Report-120304.pdf.

The Marine Recreational Information Program, or MRIP, is a new data collection and analysis initiative being implemented by NMFS to help ensure the long-term sustainability of America's fisheries and the health of our oceans. MRIP represents a management approach based on evaluating entire ecosystems, as opposed to single species of fish, and is evolving hand-in-hand with the latest marine science.

Currently being phased in across the nation, MRIP provides a more comprehensive and detailed picture of the number of trips being taken by recreational anglers, the amount and species of fish they are catching, where and when those fish are being caught, and the economic impact of recreational fishing on local, regional and national economies.

Through more timely and accurate fishing data, MRIP provides policy makers the information they need to make sound decisions based on the best science. As a program built on broad and continuing stakeholder input, MRIP also empowers anglers and other ocean enthusiasts to become a part of the resource management, conservation, and economic decision-making processes that impact their lives.

[1] Access to the commercial swordfish fishery is limited; hand gear fishermen may purchase permits from other permitted fishermen because the permits are transferable.

MRIP is a system of coordinated data collection programs designed to address specific regional needs for recreational fishing information. This regional approach based on a nationally consistent standard will ensure that the appropriate, targeted, place-based information is being collected to best meet the needs of managers and stakeholders, and that it is being done in a scientifically rigorous way.

Table 4.13 Updated Domestic Landings for the Atlantic Tunas, Swordfish and Billfish Recreational Rod and Reel Fishery, 2001-2008 (mt ww)*. Sources: NMFS, 2005; NMFS, 2006; NMFS, 2007; NMFS, 2009. (Recreational shark landings are in Table 4)

Species	Region	2001	2002	2003	2004	2005	2006	2007	2008
Bluefin Tuna**	NW Atlantic	249.3	519.3	314.6	370.2	254.4	158.2	398.6	352.2
	GOM	1.7	1.5	0.0	0.0	0.0	0.6	0.0	0.0
	Total	**251.0**	**520.8**	**314.6**	**370.2**	**254.4**	**158.8**	**398.6**	**352.2**
Bigeye tuna**	NW Atlantic	366.2	49.6	188.5	94.6	165.0	422.3	126.8	70.9
	GOM	0.0	0.0	0.0	6	0.0	24.3	0.0	0.0
	Caribbean	0.0	0.0	4.0	<0.1	0.0	0.0	0.0	0.0
	Total	**366.2**	**49.6**	**192.5**	**100.6**	**165.0**	**446.6**	**126.8**	**70.9**
Albacore**	NW Atlantic	122.3	323.0	333.8	500.5	356.0	284.2	393.6	125.2
	GOM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Total	**122.3**	**323.0**	**333.8**	**500.5**	**356.0**	**284.2**	**393.6**	**125.2**
Yellowfin tuna**	NW Atlantic	3,690.5	2,624.0	4,672.1	3,433.7	3,504.8	4,649.2	2,726.0	657.1
	GOM	494.2	200.0	640.0	247.1	146.9	258.4	227.6	366.3
	Caribbean	0.1	7.2	16.0	0.0	0.0	0.0	12.4	0.0
	Total	**4184.7**	**2,831.2**	**5,328.0**	**3,684.8**	**3,651.7**	**4,907.6**	**2,966.0**	**1,023.4**
Skipjack tuna**	NW Atlantic	32.9	23.3	34.1	27.3	8.1	34.6	27.4	21.0
	GOM	16.1	13.2	11.1	6.3	3.1	6.4	23.9	16.3
	Caribbean	0.0	13.2	15.7	40.4	3.9	7.7	0.2	11.3
	Total	**49.0**	**49.7**	**60.9**	**74.0**	**15.1**	**48.7**	**51.5**	**48.6**

Species	Region	2001	2002	2003	2004	2005	2006	2007	2008
Blue marlin***	NW Atlantic	9.0	-	-	-	-	-	-	-
	GOM	5.1	-	-	-	-	-	-	-
	Caribbean	2.3	-	-	-	-	-	-	-
	Total	**16.4**	**84**	**96**	**110**	**64**	**72**	**46**	**44**
White marlin ***	NW Atlantic	2.8	-	-	-	-	-	-	-
	GOM	0.3	-	-	-	-	-	-	-
	Caribbean	0	-	-	-	-	-	-	-
	Total	**3.1**	**33**	**20**	**25**	**26**	**36**	**31**	**47**
Sailfish***	NW Atlantic	61.2	-	-	-	-	-	-	-
	GOM	0.6	-	-	-	-	-	-	-
	Caribbean	0	-	-	-	-	-	-	-
	Total	**61.8**	**14**	**24**	**9**	**3**	**4**	**1**	**-**
Swordfish	**Total**	**1.5**	**21.5**	**6.1**	**25.2**	**61.2**	**52.7**	**68.2**	**75.7**

* Rod and reel catches and landings for Atlantic tunas represent estimates of landings and dead discards based on statistical surveys of the U.S. recreational harvesting sector.

** Rod and reel catch and landings estimates of bluefin tuna less than 73 in curved fork length (CFL) based on statistical surveys of the U.S. recreational harvesting sector. Rod and reel catch of bluefin > 73 in CFL are commercial and may also include a few metric tons of "trophy" bluefin (recreational bluefin 73 in).

*** Blue marlin, white marlin, and sailfish landings are based on prior U.S. National Reports to ICCAT and consist primarily of reported tournament landings.

Atlantic Billfish Recreational Fishery

Due to the rare nature of billfish encounters and the difficulty of monitoring landings outside of tournament events, reports of recreational billfish landings are sparse; however, the RBS provides a preliminary source for analyzing recreational billfish tournament landings. Table 4.14 documents the number of billfish reported to the RBS that were landed in tournaments from 2000 – 2008.

Table 4.14. Preliminary RBS Recreational Billfish Landings in Numbers of Fish 2000-2008. Source: NMFS Recreational Billfish Survey (RBS).

Species	2000	2001	2002	2003	2004	2005	2006	2007	2008
Blue Marlin	117	75	84	96	110	64	72	46	44
White Marlin	8	22	33	20	25	26	36	31	47
Sailfish	18	11	14	24	9	3	4	1	-
Swordfish	-	-	16	48	168	385	207	274	114

In support of the most recent sailfish assessment conducted at the 2001 SCRS billfish species group meeting, document SCRS/01/106 developed indices of abundance of sailfish from the U.S. recreational billfish tournament fishery for the period 1973 – 2000. The index of weight per 100 hours fishing was estimated from numbers of sailfish caught and reported in the logbooks submitted by tournament coordinators and NMFS observers under the RBS, as well as available size information. Document SCRS/01/138 estimated U.S. sailfish catch estimates from various recreational fishery surveys.

In support of the most recent white and blue marlin stock assessments conducted at the 2006 SCRS billfish species group meeting, document SCRS/05/030 (Diaz & Ortiz, 2006) provided updated catch rates for these species from the U.S. recreational tournament fishery, as reported to the RBS. Figure 4.5 and Figure 4.6 below provide standardized catch per unit effort in weight and numbers of fish for white marlin and blue marlin respectively.

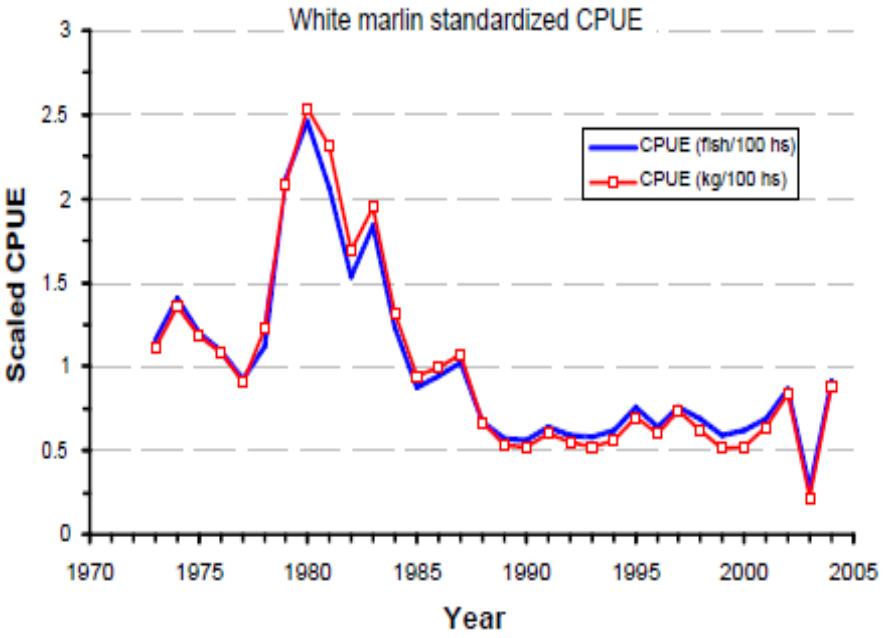

Figure 4.5 Comparison of White Marlin Standardized CPUE in Weight and Number of Fish from 1973 – 2004. Source: Diaz and Ortiz, 2006.

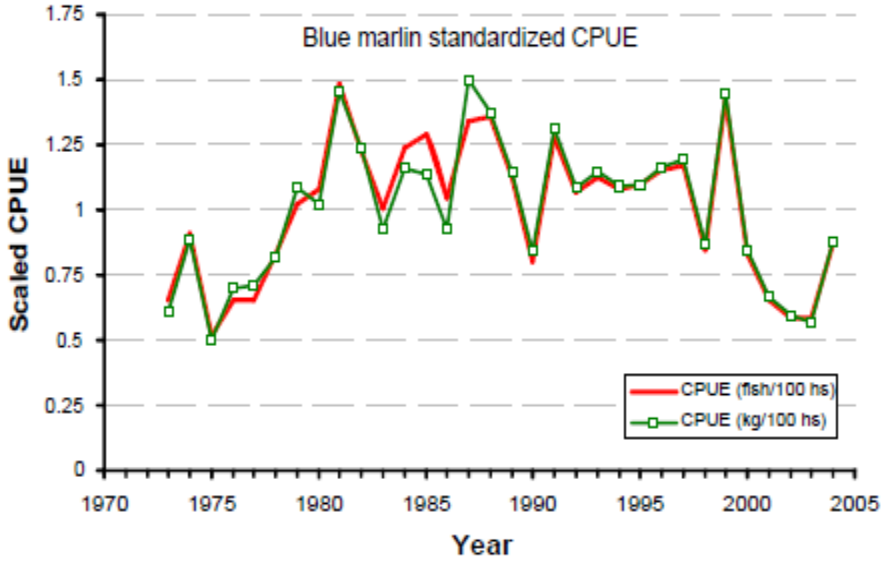

Figure 4.6. Comparison of Blue Marlin Standardized CPUE in Weight and Number of Fish from 1973 – 2004. Source: Diaz and Ortiz, 2006.

All recreational, non-tournament landings of billfish, including swordfish, are required to be reported to NMFS within 24 hours of landing by the permitted owner of the vessel landing the fish. This requirement is applicable to all permit holders, both private and charter/headboat vessels, not fishing in a tournament. In Maryland and North Carolina, vessel owners are required to report their billfish landings at state-operated landings stations. A landed fish means a fish that is kept and brought to shore. Table 4.15 provides a summary of non-tournament billfish

landings since 2004. However, due to potential large-scale non-compliance with the non-tournament reporting requirement, the landings in Table 4.15 are considered to be a minimum estimate of non-tournament billfish landings.

Table 4.15. Number of Atlantic billfish reported to NMFS via call-in system by calendar year, 2004-2009. Source: G. Fairclough, pers. comm.

Species	2004	2005	2006	2007	2008	2009*
Blue Marlin	2	4	2	5	7	5
White Marlin	0	1	1	4	4	6
Sailfish	35	61	58	101	143	103
Swordfish	290	388	549	716	369	350

* 2009 landings as of Nov. 20, 2009

Swordfish Recreational Fishery

Table 4.14 shows recreational tournament-caught swordfish landings reported to the RBS from 2000 – 2009. Table 4.15 shows the number of billfish (including swordfish) reported to the NMFS recreational non-tournament reporting system from 2004 – 2009.

The recreational North Atlantic swordfish fishery has declined dramatically from about 1980 through1999, due to decreased stock abundance, but has grown rapidly since 2003 as stock abundance has increased off the east coast of Florida and in the Mid-Atlantic Bight. In the past, the New York recreational swordfish fishery occurred incidentally to overnight yellowfin tuna trips. During the day, fishermen targeted tunas, while at night they fished deeper for swordfish. This appears to have evolved into a year-round directed swordfish fishery off the east coast of Florida and a summer fishery off the coasts of New Jersey and New York. Fish have also occasionally been reported from Maryland, Virginia, Texas, Louisiana, South Carolina, and Rhode Island.

The Florida fishery has primarily occurred at night with fishermen targeting swordfish while drift fishing live or dead bait and using additional attractants such as lightsticks, LED lights, and light bars suspended under the boat. Notably, Florida recreational fishermen have recently begun targeting swordfish by fishing on the ocean bottom during the daytime in depths exceeding 1,600 ft. In general, swordfish captured using this method are larger than those captured during nighttime drift fishing. These fishermen use specialized gear including braided lines, high capacity reels (with electric or manual retrieve), breakaway weights, and heavy duty rods.

Shark Recreational Fishery

Recreational landings of sharks are an important component of HMS fisheries. Recreational shark fishing with rod and reel is a popular sport at all social and economic levels. Depending upon the species, sharks can be caught virtually anywhere in salt water. Recreational shark fisheries often occur in nearshore waters accessible to private vessels and charter/headboats; however, shore-based and offshore fishing also occur. The following tables

provide a summary of landings for each of the three species groups. Since 2003, the recreational fishery has been limited to rod and reel and handline gear only. Similar state regulations along the Atlantic seaboard will be implemented through an Atlantic States Marine Fisheries Commission (ASMFC) interstate fishery management plan in 2010.

Table 4.16. Estimates of Total Recreational Harvest of Atlantic Sharks: 1999-2008 (numbers of fish in thousands). Source: Cortés and Neer 2005, Cortés, pers. comm. Estimates include prohibited species.

Species Group	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
LCS	82.5	138.2	137.4	80.6	89.0	67.4	85.0	59.1	68.8	45.0
Pelagic	11.1	13.3	3.8	4.7	4.3	5.0	5.4	16.5	9.0	2.8
SCS	114.4	198.4	210.8	152.5	134.3	127.0	118.8	117.2	167.6	107.9
Unclassified	7.3	11.2	24.7	5.4	18.4	28.5	47.6	7.5	23.9	6.1

Table 4.17. Recreational Harvest of Atlantic LCS by Species, in number of fish: 1999-2008. Sources: Cortés and Neer 2005, Cortés, pers. comm.

LCS Species	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Basking**	0	0	0	0	0	0	0	0	0	0
Bignose*	0	0	0	0	0	17	0	0	55	0
Bigeye sand tiger**	0	0	0	0	0	0	0	0	0	0
Blacktip	30,861	71,548	48,871	39,126	40,044	30,885	43,408	31,038	28,864	13,318
Bull	3,417	6,227	4,158	1,916	3,743	5,186	1,561	4,262	5,849	1,735
Caribbean reef*	3	59	268	741	0	652	5	47	0	0
Dusky*	5,337	2,955	5,993	1,047	2,777	36	3,040	194	112	2,391
Galapagos*	0	0	0	0	0	0	0	0	0	0
Hammerhead, great	434	925	3,422	4	47	9	55	98	786	13
Hammerhead, scalloped	606	3,623	1,373	996	2,921	879	5,021	458	1,726	119
Hammerhead, smooth	1	2	703	2	1	0	0	2	0	0
Hammerhead, unclassified	0	3,693	0	5,247	0	0	2,676	1,099	807	0
Lemon	82	5,434	5,853	4,921	4,916	5,578	510	1,145	3	818
Night*	50	24	0	0	0	0	15	1	2	0
Nurse	1,429	2,214	4,934	2,562	563	3,463	2,341	1,553	334	268
Sandbar***	20,266	10,920	36,094	8,301	5,151	3,724	2,798	821	7,060	5,801
Sand tiger**	0	0	604	0	0	0	0	1,040	0	0
Silky***	390	5,827	4,015	1,795	1,870	399	3,576	2,108	1,973	1,226
Spinner	6,175	5,571	4,118	3,997	4,864	4,041	3,269	2,281	6,547	3,824
Tiger	7	1,480	732	126	110	1	1,321	1,309	1,815	1,418
Whale**	0	0	0	0	0	0	0	0	0	0
White**	0	0	0	0	0	0	0	0	0	0
Requiem shark unclassified	13,425	17,688	16,273	9,815	22,020	12,488	15,423	11,652	12,837	11,519
Total:	82,483	138,190	137,411	80,596	89,027	67,359	85,019	59,108	68,770	45,010

*indicates species that were prohibited in the recreational fishery as of July 1, 1999.
** indicates species that were prohibited as of April 1997.
*** indicates species that were prohibited as of July 2008.

Table 4.18. Recreational Harvest of Atlantic Pelagic Sharks by Species, in number of fish: 1999-2008. Sources: Cortés and Neer 2005, Cortés, pers. comm.

Pelagic Shark Species	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Bigeye thresher*	0	0	0	65	0	0	0	42	0	0
Bigeye sixgill*	0	0	0	0	0	0	0	0	0	0
Blue Shark	5,218	7,011	950	0	376	0	31	980	1,622	117
Mako, longfin*	0	0	0	0	0	0	0	0	0	0
Mako, shortfin	1,383	5,813	2,827	3,206	3,906	5,052	3,857	3,352	2,556	1,904
Mako, unclassified	9	0	0	0	0	0	0	0	0	0
Oceanic whitetip	0	0	0	0	0	0	0	0	0	0

Pelagic Shark Species	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Porbeagle	0	0	0	0	0	0	0	0	0	0
Sevengill*	0	0	0	0	0	0	0	0	0	0
Sixgill*	0	0	0	0	0	0	0	0	0	0
Thresher	4,512	529	0	1,467	0	0	1,504	12,171	4,822	755
Total:	11,122	13,353	3,777	4,673	4,282	5,052	5,392	16,503	9,000	2,776

* indicates species that were prohibited in the recreational fishery as of July 1, 1999.

Table 4.19. Recreational Harvest of Atlantic SCS by Species, in number of fish: 1999-2008. Sources: Cortés and Neer 2005, Cortés, pers. comm.

SCS Species	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Atlantic angel*	0	0	0	0	0	0	0	0	0	0
Blacknose	6,049	10,340	14,885	11,390	6,615	15,101	7,101	9,914	9,177	3,718
Bonnethead	38,982	57,708	60,094	51,667	41,314	42,429	32,227	24,885	42,444	22,973
Finetooth	78	1,562	6,628	3,159	1,788	366	3,129	572	4,048	2,308
Sharpnose, Atlantic	69,275	128,68	129,213	86,259	84,626	69,067	76,347	81,817	111,967	78,885
Sharpnose, Caribbean*	0	0	0	0	0	0	0	0	0	0
Smalltail*	4	957	45	0	0	67	71	0	0	0
Total:	114,38	198,36	210,820	152,475	134,343	126,963	118,804	117,188	167,636	107,884

*indicates species that were prohibited in the recreational fishery as of July 1, 1999.

Bycatch Issues

Bycatch in the recreational rod and reel fishery is difficult to quantify because many fishermen simply value the experience of fishing and may not be targeting a particular pelagic species. Recreational "marlin" or "tuna" trips may yield dolphin, tunas, wahoo, and other species, both undersized and legal sized. Bluefin tuna trips may yield undersized bluefin, or a seasonal closure may prevent landing of a bluefin tuna above a minimum or maximum size. Sharks may be discarded because they are a prohibited species or undersized. In these and similar cases, rod and reel catch may be discarded and the fish may be live or dead. The Magnuson-Stevens Act (16 USC 1802 MSA § 3 (2)) specifies that fish released under a recreational catch-and-release program are not considered bycatch.

The 1999 Billfish Amendment established a catch-and-release fishery management program for the recreational Atlantic billfish fishery. As a result of this program, all Atlantic billfish that are released alive, regardless of size, are not considered bycatch. NMFS believes that establishing a catch-and-release fishery in this situation solidifies the existing catch-and-release ethic of recreational billfish fishermen, and thereby increases release rates of billfish caught in this fishery. Current billfish release rates range from 89 to 99 percent. The recreational white shark fishery is by regulation a catch-and-release fishery only, and white sharks are not considered bycatch.

Bycatch can result in death or injury to discarded fish. Therefore, bycatch mortality is incorporated into fish stock assessments, and into the evaluation of management measures. Rod and reel discard estimates from Virginia to Maine during June – October could be monitored through the expansion of survey data derived from the LPS (dockside and telephone surveys). However, the actual numbers of fish discarded for many species are so low that presenting the data by area could be misleading, particularly if the estimates are expanded for unreported effort in the future. The number of kept and released fish reported or observed through the LPS dockside intercepts for 2000 – 2008 is presented in Table 4.20.

An outreach program to address bycatch and to educate anglers on the benefits of circle hooks has been implemented by NMFS. One of the key elements of the outreach program is to provide information that leads to an improvement in post-release survival from recreational gear by encouraging recreational anglers to use circle hooks. Implementation of this outreach program began in 2007 with the distribution of DVDs to tournament operators showing the proper rigging and deployment of circle hooks with natural baits. This outreach program is anticipated to be expanded by NMFS in future years. Also, a final rule to require the mandatory use of circle hooks when fishing with natural baits in Atlantic, Gulf of Mexico, and U.S. Caribbean billfish tournaments was published in May 2007 (72 FR 26735, May 11, 2007) and became effective on January 1, 2008. As of publication of this report, NMFS has distributed over 9,000 copies of the circle hook DVDs.

Table 4.20. Observed or reported number of HMS kept in the rod and reel fishery, Maine through Virginia, 2000-2008. Source: Large Pelagic Survey (LPS) Data.

	Number of Fish Kept [1]								
Species	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**
White marlin [2]	2	5	8	12	6	5	8	4	13
Blue marlin[2]	0	1	0	4	5	3	2	2	3
Sailfish[2]	6	0	0	0	0	1	0	1	0
Swordfish	14	1	5	9	9	22	27	42	30
Giant bluefin tuna [3]	34	20	176	58	50	48	15	15	20
Large medium bluefin tuna[3]	3	7	11	11	13	12	1	5	11
Small medium bluefin tuna	30	87	62	83	30	22	48	69	48
Large school bluefin tuna	95	457	391	287	291	179	171	298	398
School bluefin	151	338	556	509	927	638	84	314	228
Young school bluefin	4	0	7	4	16	25	0	3	4
Bigeye tuna	16	9	32	21	46	32	35	59	55
Yellowfin tuna	2,366	2,423	2,595	3,216	3,858	3,700	3,572	2,988	1,029
Skipjack tuna	32	100	117	681	197	79	104	34	64
Albacore	513	302	534	546	1,458	835	542	934	168
Thresher shark	2	5	20	24	58	45	34	62	59

	Number of Fish Kept [1]								
Species	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**
Mako shark	49	27	72	141	216	99	111	143	169
Sandbar shark	1	2	0	9	7	1	1	9	1
Dusky shark	0	0	1	1	0	0	3	6	1
Tiger shark	0	1	1	0	0	1	0	1	1
Porbeagle	0	0	1	0	1	1	1	0	0
Blacktip shark	0	1	0	1	0	1	1	0	-
Atlantic sharpnose shark	0	0	0	0	0	0	0	0	-
Blue shark	12	2	36	65	74	67	61	109	43
Hammerhead shark	1	2	0	0	1	0	0	0	1
Wahoo	41	34	49	68	110	112	85	190	172
Dolphin	955	1,294	2,509	4,209	3,050	6,366	3,921	2,536	5,739
King mackerel	289	19	36	66	11	376	170	82	67
Atlantic bonito	194	77	704	315	410	96	262	283	51
Little tunny	139	48	240	121	231	181	90	195	93
Amberjack	6	19	7	44	0	2	1	5	31
Spanish mackerel	13	3	5	35	9	4	1	2	67

[1] NMFS typically expands these "raw" data to report discards of bluefin tuna by the rod and reel fishery to ICCAT. If sample sizes are large enough to make reasonable estimates for other species, NMFS may produce estimates for other species in future SAFE reports.
[2] Amendment One to the Atlantic Billfish FMP established billfish released in the recreational fishery as a "catch-and-release" program, thereby exempting these fish from bycatch considerations.
[3] Includes some commercial handgear landings.

Table 4.21. Observed or reported number of HMS released in the rod and reel fishery, Maine through Virginia, 2000-2008. Source: Large Pelagic Survey (LPS) Data.

	Number of Fish Released Alive [1]								
Species	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**
White marlin [2]	59	118	215	160	378	397	160	359	454
Blue marlin[2]	17	14	30	39	80	52	42	69	69
Sailfish[2]	0	2	6	6	2	6	3	1	6
Swordfish	5	10	6	21	22	23	52	40	45
Giant bluefin tuna [3]	0	0	8	0	3	0	3	0	0
Large medium bluefin tuna[3]	3	6	2	0	36	4	1	3	11
Small medium bluefin tuna	37	5	8	13	21	30	18	32	23
Large school bluefin tuna	22	128	47	40	107	141	85	99	286

	Number of Fish Released Alive [1]								
Species	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**
School bluefin	159	58	200	174	1,297	1,917	290	347	358
Young school bluefin	23	40	182	10	1,885	282	117	83	55
Bigeye tuna	0	8	1	3	2	2	2	1	0
Yellowfin tuna	97	74	328	200	1,093	502	351	171	411
Skipjack tuna	69	130	250	526	362	105	129	17	217
Albacore	17	52	95	31	66	67	41	40	14
Thresher shark	1	0	5	8	27	9	15	24	35
Mako shark	114	65	120	208	350	142	177	190	242
Sandbar shark	4	10	17	26	68	37	158	168	222
Dusky shark	32	8	9	44	60	49	73	87	128
Tiger shark	3	2	3	12	0	6	7	11	20
Porbeagle	0	0	14	3	1	6	8	2	2
Blacktip shark	0	0	6	0	1	19	9	31	-
Atlantic sharpnose shark	0	0	0	0	0	11	0	0	-
Blue shark	374	141	505	2,060	2,242	920	884	1,978	2,735
Hammerhead shark	0	1	6	38	2	5	0	0	0
Wahoo	0	13	6	3	5	7	6	9	4
Dolphin	48	108	111	677	192	375	394	227	372
King mackerel	24	10	5	5	1	7	20	3	5
Atlantic bonito	27	49	176	282	389	231	114	60	36
Little tunny	118	118	585	443	1,130	505	102	387	614
Amberjack	20	14	57	111	1	2	13	33	145
Spanish mackerel	0	0	0	1	0	0	0	2	37

[1] NMFS typically expands these "raw" data to report discards of bluefin tuna by the rod and reel fishery to ICCAT. If sample sizes are large enough to make reasonable estimates for other species, NMFS may produce estimates for other species in future SAFE Reports.
[2] Amendment One to the Atlantic Billfish FMP established billfish released in the recreational fishery as a "catch-and-release" program, thereby exempting these fish from bycatch considerations.
[3] Includes some commercial handgear landings.

4.4.3 International Issues and Catch

Directed recreational fisheries for HMS occur in the United States, Venezuela, the Bahamas, and Brazil. Many other countries and entities in the Caribbean and the west coast of Africa are also responsible for significant HMS recreational landings. Directed recreational fisheries for sailfish occur in the Western Atlantic and include the United States, Venezuela, the Bahamas, Brazil, Dominican Republic, Mexico, and other Caribbean nations. However, of these countries, the United States is the only country that currently reports recreational landings to ICCAT. Therefore, a comparison of the percentage of U.S. landings relative to recreational

fisheries in other countries is not possible. Further, because total landings data (including recreational landings) are incomplete, HMS stock assessments are often hampered.

As part of a 1997 SCRS survey, 12 ICCAT member countries as well as Chinese Taipei and Senegal provided information on the existence of, and level of data collection for, recreational and artisanal fisheries. The survey results indicated that Brazil, Canada, France, Italy, Morocco, United Kingdom, Bermuda, and the United States have recreational fisheries in the ICCAT area of concern. Levels of data collection have varied widely from country to country, making any comparison of catch levels difficult and potentially inaccurate. The wide range of recreational catches across nations and species continues to warrant further exploration of potential data sources and the feasibility of increased recreational monitoring. At this time only limited information is available regarding international HMS recreational catches.

At the 1999 ICCAT meeting in Rio de Janeiro, Brazil, the Commission adopted a resolution (99-07) to improve the quantity and quality of recreational data collection. Recreational fisheries were to be discussed and assessed in each country's National Report beginning in the year 2000. In addition, the SCRS was called upon to examine the impact of recreational fishing on tuna and tuna-like species.

At the 2004 ICCAT meeting in New Orleans, the Commission adopted a recommendation concerning prohibited gear in the sport and recreational fisheries in the Mediterranean Sea (04-12). Prohibited gear includes towed and encircling nets, seine sliding, dredgers, gill nets, trammel net and longline to fish for tuna and tuna-like species. The recommendation also prohibits the sale of sport and recreational tuna and tuna-like species and stipulates that data on these fisheries be collected and transmitted to the SCRS. At the 2005 ICCAT meeting, the Commission adopted a resolution (05-8) calling for research and exchange of information pertaining to circle hooks and their use in recreational and commercial fisheries. In 2006, the Commission passed a resolution (06-17) to form a recreational fisheries working group which would meet in 2007 and 2008 to discuss data and landings for recreational fisheries, management approaches, and the biological impacts of recreational fisheries on managed species. There were no resolutions or recommendations specific to recreational fisheries adopted at the 2007 or 2008 meetings.

The first meeting of the Working Group on Sport and Recreational Fishing occurred on Friday, November 6, 2009. The United States was the only party to provide information detailing its recreational fisheries as required by the Recommendation that established the Working Group. Discussions of the Recreational Working Group centered around two issues: the need to improve recreational monitoring, data collection, and reporting; and, the development of a common understanding/definition of recreational and sport fishing. There was consensus within the working group regarding the need to improve recreational monitoring, data collection, and reporting. Regarding development of a common definition, the majority of CPCs that commented expressed general agreement that it would be appropriate to include the concept of non-commercial activities as a key component of a definition. There was not consensus on this point, as some CPCs indicated that there are instances where recreationally caught fish may legitimately enter the stream of commerce. The Working Group agreed that CPCs should submit information similar to that provided by the United States to the ICCAT Secretariat, continue

discussions intercessionally, seek to define common methodologies for data collection, and that the Commission should work to decide whether it would be helpful to develop a common definition of sport and recreational fisheries related to the non-commercial nature of these fisheries.

4.5 Bottom Longline (BLL)

4.5.1 Current Management

The majority of commercially caught sharks are caught using BLL gear. However, the regulations for the shark fishery as discussed in this section apply to all gear types. In 1993, NMFS implemented the FMP for Sharks of the Atlantic Ocean, which established three management units: large coastal sharks (LCS), small coastal sharks (SCS), and pelagic sharks. At that time, NMFS identified LCS as overfished, and implemented commercial quotas for LCS and established recreational harvest limits for all sharks. This 1993 FMP established the basis for all subsequent shark management. However, the shark regulations have changed many times since the original 1993 FMP. Some of the more recent amendments started in 2003. At that time, NMFS amended the measures based on the 2002 LCS and SCS stock assessments, litigation, and public comments (December 24, 2003, 68 FR 74746). Management measures enacted in that amendment included: modifying the commercial quotas, eliminating the commercial minimum size restrictions, establishing three regional commercial quotas (Gulf of Mexico, South Atlantic, and North Atlantic) for LCS and SCS management units, implementing trimester commercial fishing seasons, imposing gear restrictions to reduce bycatch, and a time/area closure off the coast of North Carolina effective January 1, 2005. The overall annual landings quota for LCS in 2004 was established at 1,017 mt dressed weight (dw). The overall annual landings quota for SCS was established at 454 mt dw and the pelagic, blue, and porbeagle shark quotas were established at 488 mt dw, 273 mt dw, and 92 mt dw, respectively.

Based on 2005 and 2006 stock assessments, NMFS further revised shark management measures and rebuilding periods in the final rule for Amendment 2 to the 2006 Consolidated HMS FMP published on June 24, 2008 (73 FR 35778; corrected on July 15, 2008, 73 FR 40658). The final rule became effective on July 24, 2008. In the final rule, NMFS removed sandbar sharks from the LCS complex and established a non-sandbar LCS complex. In addition, NMFS established two regions for the non-sandbar LCS: an Atlantic and Gulf of Mexico region. NMFS also implemented new annual adjusted quotas for sandbar sharks (87.9 mt dw), non-sandbar LCS (Atlantic: 187.7 mt dw; Gulf of Mexico: 390.5 mt dw), and a porbeagle shark commercial quota (1.7 mt dw). The sandbar shark and non-sandbar LCS quotas would increase to their annual base quotas of 116.6 mt dw for sandbar sharks, 188.3 mt dw for non-sandbar LCS in the Atlantic region, and 439.5 mt dw for non-sandbar LCS in the Gulf of Mexico region as of January 1, 2013, depending on overharvests. NMFS maintained the annual SCS quota (454 mt dw), pelagic sharks quota (273 mt dw for blue sharks), and quota for pelagic sharks other than porbeagle and blue sharks (488 mt dw).

Until Amendment 2 was implemented, the Atlantic BLL fishery targeted both LCS and SCS. Currently, BLL is still the primary commercial gear employed in the LCS and SCS fisheries in all regions although the trip limits implemented in Amendment 2 were designed, in part, to discourage fishermen from targeting LCS. Gear characteristics vary by region, but in

general, an approximately ten-mile long BLL, containing about 600 hooks is fished overnight. Skates, sharks, or various fin fishes are used as bait. The gear typically consists of a heavy monofilament mainline with lighter weight monofilament gangions. Some fishermen may occasionally use a flexible 1/16 inch wire rope as gangion material or as a short leader above the hook.

4.5.2 Recent Catch, Landings, and Discards

The following section provides information on shark landings as reported in the shark BLL observer program. In January 2002, the observer coverage requirements in the shark BLL fishery changed from voluntary to mandatory participation if selected. At that time, NMFS selected approximately 40 - 50 vessels for observer coverage during each season. Vessels were randomly selected if they have a directed shark limited access permit, have reported landings from sharks during the previous year, and have not been selected for observer coverage during each of the three previous seasons.

The U.S. Atlantic commercial shark BLL fishery was monitored by the University of Florida and Florida Museum of Natural History, Commercial Shark Fishery Observer Program (CSFOP) from 1994 through the first season of 2005. In June 2005, responsibility for the observer program was transferred to the SEFSC's Panama City Laboratory. The observer program trains and places the observers aboard vessels in the directed shark BLL fishery in the Atlantic and Gulf of Mexico to collect data on the commercial shark fishery and thus improve overall management strategies for the fishery. Observers provide baseline characterization information, by region, on catch rates, species composition, catch disposition, relative abundance, and size composition within species for the LCS and SCS BLL fisheries.

From 2003 through 2007, approximately 217 trips were observed and 31,170 animals were caught. In 2003, LCS comprised 68.4 percent of the total catch, and sandbar sharks were 30.6 percent of total LCS catch. In 2004, LCS comprised 66.7 percent of the total catch, and sandbar sharks were 26.6 percent of the catch. Blacktip sharks comprised 13.9 percent of total observed catch and 20.3 percent of the large coastal catch (Burgess and Morgan, 2002). In 2005, the total observed catch composition (percent of numbers caught) was 77.9 percent for sharks in the South Atlantic, and 83.1 percent of sharks caught in the Gulf of Mexico. In 2006, the level of observer coverage of the total fishing effort in each fishing area and during each fishing season decreased from 5 to 3.9 percent. The total observed catch composition in 2006 was 96.9 percent for sharks in the Atlantic Ocean and 6.5 percent for sharks in the Gulf of Mexico. In 2007, LCS comprised the greatest amount of shark catch in The Gulf of Mexico at 69.5 percent and SCS comprised of 30.3 percent. In the South Atlantic, LCS species comprised 78.7 percent of the shark catch while SCS species comprised 19.2 percent of the shark catch (Hale *et al.*, 2007).

Relatively few protected species are caught on BLL intended for sharks. Four loggerhead sea turtles were observed caught in BLL gear targeting sharks in the Gulf of Mexico. Of these, two were released alive, and two were released dead. No loggerhead sea turtles were observed caught in BLL gear targeting sharks in the Atlantic. However, three smalltooth sawfish were observed caught, with two being released alive and one released dead. For more information on

bycatch see Section 7.4. Additional information on shark stock assessments can be found in Chapter 2.0 and shark landings in Section 4.10.

The final rule for Amendment 2 to the Consolidated HMS FMP (73 FR 35778, June 24, 2008, corrected at 73 FR 40658, July 15, 2008) established, among other things, a shark research fishery to maintain time series data for future stock assessments. The shark research fishery also allows selected commercial fishermen the opportunity to earn revenue from selling more sharks, including sandbar sharks, than fishermen operating outside the research fishery. Only the commercial shark fishermen selected to participate in the shark research fishery are authorized to land/harvest sandbars subject to the sandbar quota available each year. The selected shark research fishery permittees also have access to the non-sandbar LCS, SCS, and pelagic shark quotas. Commercial fishermen not participating in the shark research fishery may land non-sandbar LCS, SCS, and pelagic sharks subject to retention limits and quotas per 50 CFR 635.24 and 635.27, respectively.

In 2008, the shark BLL observer program covered a total of 50 trips on 17 vessels with a total of 214 hauls. Gear characteristics of trips varied by area (Gulf of Mexico or the U.S. Atlantic Ocean) and target species (grouper/snapper or grouper/tilefish, shark or tilefish) (for more details, see Hale *et al*., 2009). There were no grouper/snapper or grouper/tilefish targeted trips observed in the U.S. Atlantic Ocean. No trips were observed in the northern U.S. Atlantic Ocean. Observers documented the catches and fishing effort on 147 hauls and 7 trips targeting snapper/grouper or grouper/tilefish in the Gulf of Mexico. There were 41 hauls on 27 trips observed targeting sharks in the Gulf of Mexico. In the U.S. Atlantic Ocean, 26 hauls on 16 trips were observed targeting sharks.

In 2008 on the trips targeting shark in the Gulf of Mexico, 2,540 individual animals were caught. This consisted of 90.8 percent sharks, 7.7 percent teleosts, 0.8 percent invertebrates, and 0.6 percent batoids. LCS comprised the greatest amount of shark catch, at 75.3 percent, and SCS comprised 22.3 percent (Table 4.22). The prohibited dusky shark, Caribbean reef shark, night shark, and white shark were also caught (1.0 percent) (Table 4.22). Sandbar sharks were the most commonly caught shark (16.6 percent) (Hale *et al*., 2009).

In 2008, on the trips targeting grouper/snapper or grouper/tilefish in the Gulf of Mexico, 10,253 individual animals were caught. This consisted of 86.1 percent teleosts, 12.0 percent sharks, 1.8 percent invertebrates, and 0.04 percent batoids. Deep water shark species comprised the majority of the shark catch at 52.0 percent, followed by small coastal sharks (29.5 percent), large coastal sharks (10.4 percent) and pelagic sharks (0.1 percent). Smooth dogfish were the most caught shark (Hale *et al*., 2009).

On the trips targeting shark in the South Atlantic in 2008, 1,836 individual animals were caught. This consisted of 99.1 percent sharks, 0.4 percent teleosts 0.4 percent batoids, and 0.1 percent invertebrates. Large coastal shark species comprised 83.8 percent of the shark catch while SCS species comprised 16.1 percent and deep water sharks comprised 0.1 percent of the shark catch (Table 4.23). Tiger sharks were the most commonly caught shark (50.5 percent) (Hale *et al.*, 2009).

Smalltooth sawfish are rarely caught on BLL and more detailed information can be found in Section 7.6.4. No other protected species interactions were observed in the Gulf of Mexico directed shark BLL fishery. For vessels targeting shark in the Atlantic, one loggerhead turtle was observed caught in BLL gear and ultimately released alive. No other protected species interactions were observed in the South Atlantic directed shark BLL fishery (Hale *et al.*, 2009).

In 2008, selected vessels were allowed a trip limit of 2,750 lbs dw, of which no more than 2,000 lbs dw were allowed to be sandbar sharks. As of October 2009, vessels participating in the shark research fishery fished an average of 2 trips per month.

4.5.3 Bottom Longline Bycatch

Under the MMPA (16 U.S.C. 1361 *et seq*.) the Atlantic shark BLL is classified as Category III (remote likelihood or no known serious injuries or mortalities) (December 1, 2008; 73 FR 73032). As required by the Endangered Species Act (ESA), the NMFS Southeast Regional Office's Protected Resources Division prepared aBiological Opinion (BiOp) regarding the actions proposed under Amendment 2 to the 2006 Consolidated HMS FMP on May 20, 2008. The BiOp concluded, based on the best available scientific information, that Amendment 2 to the HMS FMP was not likely to jeopardize the continued existence of endangered green, leatherback, and Kemp's ridley sea turtles; the endangered smalltooth sawfish; or the threatened loggerhead sea turtle. The actions implemented under Amendment 2 were not expected to jeopardize the continued existence of any endangered or threatened species. Furthermore, the BiOp concluded that the actions implemented under Amendment 2 were not likely to adversely affect any listed species of marine mammals, invertebrates (*i.e.*, listed species of coral) or other listed species of fishes (*i.e.*, Gulf sturgeon and Atlantic salmon) in the action area. For more information on the BiOp see the 2008 SAFE report.

Table 4.22 Shark species composition of observed BLL catch during 2008 for BLL trips targeting sharks in the Gulf of Mexico. Source: Hale *et al*., 2009.

Species	Total Number Caught	% Total Catch	% Kept	% Discarded Dead	% Discarded Alive	% Unknown
Sandbar shark	382	15.1	98.4	0.3	1	0.3
Atlantic sharpnose shark	327	12.9	83.2	15	0.6	1.2
Tiger shark	324	12.8	38.6	4.3	55.9	1.2
Bull shark	320	12.6	92.5	0.3	4.7	2.5
Blacktip shark	270	10.6	85.2	11.5	3	0.4
Nurse shark	241	9.5	10	0.8	89.2	0
Blacknose shark	177	7	83.1	15.3	1.7	0
Great hammerhead shark	69	2.7	94.2	1.4	2.9	1.4
Lemon shark	65	2.6	98.5	0	0	1.5

Species	Total Number Caught	% Total Catch	% Kept	% Discarded Dead	% Discarded Alive	% Unknown
Scalloped hammerhead shark	38	1.5	92.1	2.6	2.6	2.6
Shortspine dogfish	28	1.1	32.1	17.9	50	0
Silky shark	19	0.7	89.5	5.3	5.3	0
Dusky shark	16	0.6	0	100	0	0
Bonnethead shark	7	0.3	57.1	42.9	0	0
Caribbean reef shark	7	0.3	71.4	28.6	0	0
Shortfin mako shark	3	0.1	100	0	0	0
Spinner shark	3	0.1	66.7	0	33.3	0
Night shark	2	0.1	0	50	50	0
Requiem shark family	2	0.1	0	100	0	0
Finetooth shark	1	0	0	100	0	0
Great white shark	1	0	0	100	0	0
Sharks	1	0	0	0	0	100
Smooth dogfish	1	0	0	100	0	0
Smooth hammerhead shark	1	0	100	0	0	0
Spiny dogfish	1	0	0	0	100	0
Total	**2414**					

Table 4.23 Shark species composition of observed BLL catch during 2008 for BLL trips targeting sharks in the South Atlantic. Source: Hale *et al*., 2009.

Species	Total Number Caught	% Total Catch	% Kept	% Discarded Dead	% Discarded Alive	% Unknown
Tiger shark	920	50.1	12.2	10.2	76.8	0.8
Sandbar shark	383	20.9	85.9	1.3	11.7	1
Atlantic sharpnose shark	290	15.8	94.1	5.5	0	0.3

Species	Total Number Caught	% Total Catch	% Kept	% Discarded Dead	% Discarded Alive	% Unknown
Blacktip shark	148	8.1	80.4	15.5	3.4	0.7
Great hammerhead shark	34	1.9	88.2	8.8	0	2.9
Bull shark	23	1.3	73.9	4.3	21.7	0
Nurse shark	13	0.7	0	0	100	0
Clearnose skate	5	0.3	100	0	0	0
Blacknose shark	4	0.2	100	0	0	0
Lemon shark	3	0.2	66.7	0	33.3	0
Sharks	1	0.1	0	100	0	0
Smooth dogfish	1	0.1	100	0	0	0
Total	**1825**					

4.6 Gillnet Fishery

4.6.1 Current Management

The southeast shark gillnet fishery is comprised of several vessels based primarily out of ports in northern Florida (South Atlantic Region). These vessels use drift gillnet, strike gillnet, and sink gillnet gear. Set duration is generally 0.3 hours in depths averaging 20.9 m, and haulback averages 3.3 hours. The average time from setting the net through completion of haulback is 10.2 hours. Stretched mesh sizes measures from 12.7-25.4 cm (5 – 10 in). Strikenetters use the largest mesh size (22.9-30.4 cm; 9 – 12 in), and the set times are 3.2 hours, with nets approximately 364.8 m long and 30.4 m deep. Sink gillnets that are used to target sharks generally have a 7.3-20.3 cm (2.9 – 8 in) mesh size, and the process lasts for approximately 6.1 hours. This gear has also been observed while deployed to target non-HMS (teleosts). In those cases, sink gillnets use a stretched mesh size of 6.4-12.7 cm (2.5 – 5 in), and the entire process takes approximately 2.3 hours (Carlson and Bethea, 2007).

In 2001, NMFS established a requirement that fishermen conduct net checks every two hours to look for and remove any protected species. In 2007 the regulations implementing the Atlantic Large Whale Take Reduction Plan were amended, thus removing the requirement for 100 percent observer coverage for drift gillnet vessels during the right whale calving season and

prohibiting all gillnets in an expanded southeast U.S. restricted area from Cape Canaveral, Florida to the North Carolina/South Carolina border during November 15 – April 15. The rule has limited exemptions, which allows shark strikenet fishing only in waters south of 29° N. latitude during this same period and for Spanish mackerel, *Scomberomorus maculates,* gillnet fishing in the months of December to March. Operations in this area during this time period require aVMS and observer coverage, if selected. Based on these regulations, and on current funding levels, the shark gillnet observer program now covers all anchored (sink, stab, set), strike, or drift gillnets fishing by vessels that fish from Florida to North Carolina, year-round.

4.6.2 Recent Catch, Landings and Discards

Under the MMPA (16 U.S.C. 1361 *et seq*.) the Atlantic shark gillnet fishery is classified as Category II (occasional serious injuries and mortalities) (December 1, 2008; 73 FR 73032). The following section provides information on shark landings as reported in the shark gillnet observer program. The "Catch and Bycatch in U.S. Southeast Gillnet Fisheries, 2008" report described the gear and soak time deployed by drift gillnet, strike gillnet, and sink gillnet fishermen (Passerotti and Carlson, 2009).

4.6.2.1 Gillnet Landings and Bycatch

Strikenets - NMFS published a final rule (72 FR 34632, June 25, 2007) to reduce bycatch of right whales. It prohibits gillnet fishing or gillnet possession during periods associated with the right whale calving season. Limited exemptions to the fishing prohibitions are provided for gillnet fishing for sharks and for Spanish mackerel south of 29°00' N. lat. In this area, only gillnets used in a strikenet fashion can operate during day time when right whales are present. Operation in this area at that time requires VMS and observer coverage, if selected. Vessels fishing in a strikenet fashion used nets 364.8 m long, 30.4 m deep, and with mesh size 22.9 cm.

The total observed strike gillnet catch consisted of eight species of sharks from 2005-2006. Finetooth and blacktip sharks made up the greatest percentage of catch in terms of total number caught in strike gillnets from 2005-2006 (Table 4.24). There were no strike gillnet trips observed in 2007, potentially due a first trimester closure of the large coastal shark fishery. This closure was required because of 2006 landings in excess of the quota (Baremore *et al.*, 2007). Similarly, in 2008, no vessels were observed using strikenets to target sharks. This is likely due to the large coastal shark fishery closure in place during the first half of 2008, correcting for overages from the 2007 harvest (Passerotti and Carlson, 2009).

In the strikenet fishery from 2005-2006, 99.7 percent of the observed catch were sharks with only 0.15 percent teleosts, and 0.07 percent non-shark elasmobranchs. Blacktip, finetooth, and spinner shark comprised over 94 percent of the observed shark strike net catch by number and weight (Carlson and Bethea, 2007).

Drift Gillnets – In 2007, a total of five driftnet gillnet vessels were observed on 11 trips. The total observed catch composition for sets targeting sharks was 86.7 percent shark, 13.3 percent teleosts, zero percent non-shark elasmobranches, and zero percent protected resources.

Two species of sharks made up 98.1 percent of the observed shark catch: Atlantic sharpnose shark and blacknose shark (Baremore *et al.*, 2007).

In 2008, a total of five driftnet gillnet vessels were observed making 68 sets on 9 trips. The total observed catch composition for sets targeting sharks was 74.9 percent shark, 22.2 percent teleosts, 1.8 percent non-shark elasmobranches, and zero percent protected resources. Two species of sharks made up 99.1 percent of the observed shark catch by number: smooth dogfish (87.2 percent) and spiny dogfish (11.8 percent) (Table 4.25) (Passerotti and Carlson, 2009).

Sink Gillnets - Sinknet landings and bycatch vary by target species. A total of 29 trips making 112 sink net sets on six vessels were observed in 2007. Of those, 17 trips targeted sharks, 3 trips targeted Spanish mackerel, 4 trips targeted Atlantic croaker, and 6 trips targeted other teleosts. Sink gillnets that targeted sharks caught 97.8 percent shark, 1.4 percent teleosts, 0.7 percent non-shark elasmobranches, and 0.1 percent protected resources. By number, the shark catch was primarily bonnethead shark, finetooth shark, Atlantic sharpnose shark, and blacknose shark (Baremore *et al*., 2007).

Catch of vessels targeting Spanish mackerel was 99.4 teleosts and 0.6 percent shark. Shark catches were mostly Atlantic sharpnose by number, and blacktip and bonnethead sharks (Baremore *et al*., 2007).

Sink gillnet vessels targeting croaker caught 3.2 percent sharks, 96.7 percent teleosts, an 0.01 percent non-shark elasmobranches. Sink gillnet vessels that targeted other species other than sharks, Spanish mackerel, and Atlantic croaker caught mostly bluefish and Atlantic croaker (Baremore *et al*., 2007).

A total of 41 trips making 134 sink net sets on 14 vessels were observed in 2008. Target species included shark, Spanish mackerel, Southern kingfish, and goosefish (monkfish). Specific proportion breakdown of target species by trip was not possible in the 2008 data due to vessel confidentiality restrictions. Sink gillnets, regardless of target species, caught 86.0 percent teleosts, 12.0 percent sharks, 1.7 percent non-shark elasmobranchs and zero percent protected resources. By number, the shark catch was primarily Atlantic sharpnose shark (45.3 percent), bonnethead shark (34.0 percent), blacknose shark (8.0 percent) and spinner shark (6.7 percent) (Table 4.26). By weight the shark catch was made up of mostly Atlantic sharpnose shark, followed by bonnethead shark, blacknose shark and spinner shark, finetooth shark (Passerotti and Carlson, 2009). Smalltooth sawfish are uncommonly caught in gillnet gear. More detailed information can be found in Section 7.6.4.

Table 4.24 Total Strike gillnet Shark Catch by Species in order of Decreasing Abundance for all Observed Trips, 2005-2006. Source: Carlson and Bethea, 2007.

Species	Total Number Caught	Kept (%)	Discarded Alive (%)	Discarded Dead
Blacktip shark	9,831	89.5	0.2	10.3
Finetooth	1,687	100	0	0
Spinner Shark	1,108	100	0	0
Blacknose shark	541	100	0	0
Dusky shark	20	0	25	75
Atlantic sharpnose	7	100	0	0
Scalloped Hammerhead	7	71.4	0	28.6
Bonnethead shark	3	100	0	0
Bull shark	2	100	0	0
Nurse shark	1	100	0	0
Total	**13,207**			

Table 4.25 Total Shark Catch by Species and Species Disposition in Order of Decreasing Abundance for all Observed Drift gillnet Sets 2008. Source: Passerotti and Carlson, 2009

Species	Total Number Caught	Kept (%)	Discarded Alive (%)	Discarded Dead
Smooth dogfish	2331	79.1	20.9	0
Spiny dogfish	316	0	100	0
Atlantic sharpnose shark	7	28.6	71.4	0
Thresher shark	6	100	0	0
Sand tiger shark	3	0	100	0
Blacktip shark	2	50	50	0
Sandbar shark	2	0	100	0
Angel shark	2	0	100	0
Blacknose shark	1	0	0	100
Spinner shark	1	0	100	0
Great hammerhead shark	1	0	100	0
Total	**2,672**			

Table 4.26 Total Sink gillnet Shark Catch by Species in order of Decreasing Abundance for allObserved Trips, 2008. Source: Passerotti and Carlson, 2009.

Species	Total Number Caught	Kept (%)	Discarded Alive (%)	Discarded Dead
Atlantic sharpnose shark	853	73.4	11.4	15.2
Bonnethead	609	86.4	3.9	9.7
Blacknose shark	143	98.6	1.4	0
Spinner shark	120	55	10.8	34.2
Blacktip shark	73	24.7	63	12.3
Scalloped hammerhead shark	16	12.5	75	12.5
Spiny dogfish	9	0	22.2	77.8
Finetooth shark	4	25	75	0
Dusky shark	3	0	0	100
Smooth dogfish	2	0	100	0
Sand tiger shark	2	0	100	0
Atlantic guitarfish	1	0	100	0
Total	**1,835**			

4.7 Buoy Gear

4.7.1 Domestic History and Current Management

In recent years, a commercial swordfish handgear fishery has developed off the east coast of Florida and a detailed history of this fishery may be found in the 2006 Consolidated HMS FMP. Commercial buoy gear was authorized in 2006 for Swordfish Directed and Handgear permit holders. Swordfish Directed permit holders may retain swordfish only if they have also been issued a Shark Directed or Incidental limited access permit and an Atlantic Tunas Longline permit. Swordfish Handgear permit holders are not required to be issued other permits to retain swordfish. HMS Charter/Headboat, Angling, and Swordfish Incidental permit holders may not fish with buoy gear.

Buoy gear means a fishing gear consisting of one or more floatation devices supporting a single mainline to which no more than two hooks or gangions are attached. The buoy gear fishery is usually prosecuted at night. Authorized permit holders may not possess or deploy more than 35 floatation devices, and may not deploy more than 35 individual buoy gears per vessel. Buoy gear must be constructed and deployed so that the hooks and/or gangions are attached to the vertical portion of the mainline. Floatation devices may be attached to one but not both ends of the mainline, and no hooks or gangions may be attached to any floatation device or horizontal portion of the mainline. If more than one floatation device is attached to a buoy

gear, no hook or gangion may be attached to the mainline between them. Individual buoy gears may not be linked, clipped, or connected together in any way. Buoy gears must be released and retrieved by hand. All deployed buoy gear must have some type of monitoring equipment affixed to it including, but not limited to, radar reflectors, beeper devices, lights, or reflective tape. If only reflective tape is affixed, the vessel deploying the buoy gear must possess on board an operable spotlight capable of illuminating deployed floatation devices. If a gear monitoring device is positively buoyant, and rigged to be attached to a fishing gear, it is included in the 35 floatation device vessel limit and must be marked appropriately.

4.7.2 Recent Catch, Landings, and Discards

Buoy gear effort and catch data are available for 2007 and 2008 (Table 4.27, Table 4.28**,** and Table 4.29). Prior to 2007, buoy gear catch data were included in handline catch data.

Table 4.27 Buoy gear effort. Source: NMFS Pelagic Logbook Program

	2007	2008
Number of Vessels	42	44
Number of Trips	745	598
Avg. Buoy Gears Deployed per Trip	11.0	11.2
Total Number of Hooks Set	11,742	8,922
Avg. Number Hooks per Gear	1.4	1.3

Table 4.28 Buoy gear landings in pounds dressed weight. Source: NMFS Pelagic Logbook Program

	2007	2008
Swordfish	183,982	122,700
Dolphin	966	1,031
Oilfish	346	414
Shortfin mako shark	308	797
Wahoo	63	227
Bigeye tuna	150	0
Blacktip shark	9	0
King mackerel	0	194

Table 4.29 Buoy gear catches and discards in numbers of fish. Source: NMFS Pelagic Logbook Program

	2007	2008
Kept		
Swordfish	2,849	1,843
Dolphin	63	103
Oilfish	7	10
Bigeye tuna	5	0

	2007	2008
Blackfin tuna	3	7
Wahoo	2	6
Bonito	0	7
King mackerel	0	53
Shortfin mako	3	4
Hammerhead shark	1	0
Blacktip shark	1	0
Silky shark	0	1
Released Alive		
Swordfish	1,559	1,018
Blue marlin	1	0
White marlin	0	3
Sailfish	2	1
Hammerhead shark	14	7
Blue shark	0	2
Thresher shark	0	1
Dusky shark	4	0
Night shark	16	1
Oceanic whitetip shark	0	1
Bigeye thresher shark	4	0
Tiger shark	1	2
Sandbar shark	1	0
Longfin mako shark	4	3
Shortfin mako shark	0	1
Discarded Dead		
Swordfish	129	80
Silky shark	9	0
Hammerhead shark	1	0

4.8 Green-Stick Gear

4.8.1 Current Management

Effective October 23, 2008, Green-stick gear was specifically defined and authorized for the harvest of Atlantic tunas on Atlantic Tunas General, HMS Charter/Headboat (CHB), and Atlantic Tunas Longline permitted vessels (73 FR 54721, September 23, 2008). Green-stick gear (Figure 4.7) is defined as "an actively trolled mainline attached to a vessel and elevated or suspended above the surface of the water with no more than 10 hooks or gangions attached to the mainline. The suspended line, attached gangions and/or hooks, and catch may be retrieved collectively by hand or mechanical means. Green-stick does not constitute a pelagic longline or a bottom longline as defined in this section or as described at §635.21(c) or §635.21(d), respectively." Green-stick gear may be used to harvest bigeye, northern albacore, yellowfin, and skipjack tunas (collectively referred to as BAYS tunas) and bluefin tuna aboard Atlantic Tunas General, HMS Charter/Headboat, and Atlantic Tunas Longline permitted vessels.

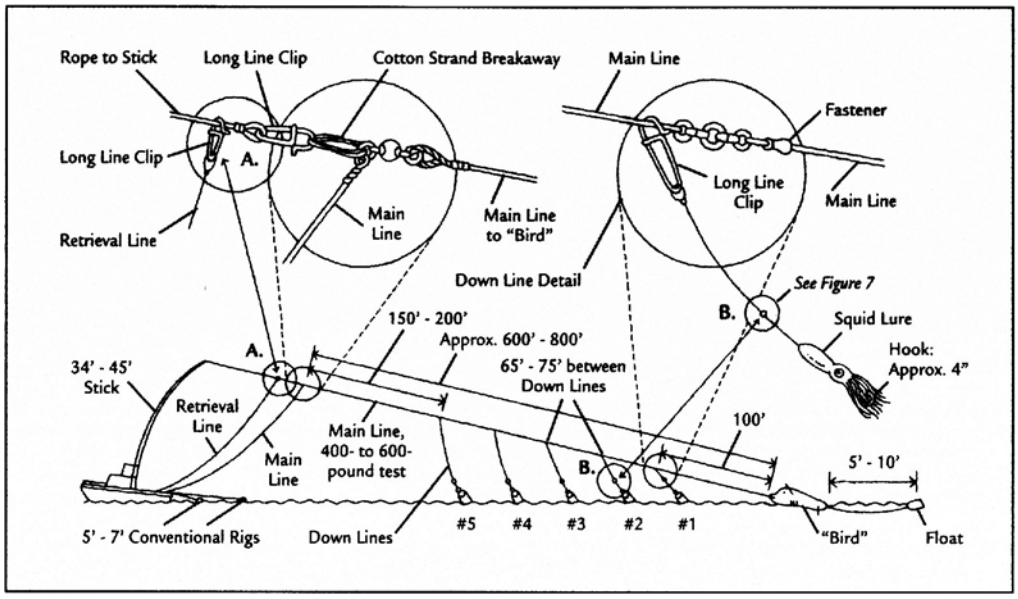

Figure 4.7 A diagram of green-stick fishing gear. Source: Wescott (1996).

Onboard Atlantic Tunas Longline permitted vessels, up to 20 J-hooks may be possessed for use with green-stick gear and no more than 10 J-hooks may be used with a single green-stick gear. J-hooks may not be used with PLL gear and no J-hooks may be possessed onboard a PLL vessel unless green-stick gear is also onboard. J-hooks possessed and used onboard PLL vessels may be no smaller than 1.5 inch (38.1 mm) when measured in a straight line over the longest distance from the eye to any other part of the hook.

Green-stick gear is used in Atlantic tuna fisheries. These fisheries are typically most active during the summer and fall, although in the South Atlantic and Gulf of Mexico fishing occurs during the winter months. Fishing usually takes place between eight and two hundred km from shore. Baits used with green-stick gear may be artificial or natural with the most common bait being artificial squid. The use of green-stick gear is most common off the mid and south Atlantic states of North Carolina and South Carolina with some use also occurring off the New England states. A limited number of vessels use green-stick gear in the northern Gulf of Mexico as well.

Commercial Atlantic tunas permits authorized to use green-stick gear are Atlantic Tunas General, HMS Charter/Headboat, and Atlantic Tunas Longline. Atlantic Tunas General and HMS CHB are open access. The Atlantic Tunas Longline permit is limited access and, in order to be valid, a vessel must also hold a shark and swordfish limited access permit. These vessels may also need permits from the states they operate out of in order to land and sell their catch. All commercial permit holders are encouraged to check with their local state fish/natural resource management office regarding these requirements. Permitted vessels are also required to sell their Atlantic tunas to federally permitted Atlantic tuna dealers. Atlantic tunas dealer permits are issued by the Northeast Region Permit Office and vessel owner/operators are encouraged to contact the permitting office directly, either by phone at (978) 281-9438 or via the web at http://www.nero.noaa.gov/ro/doc/vesdata1.htm, to obtain a list of permitted dealers in their area.

Vessels that are permitted in the General and Charter/Headboat categories commercially fish under the General category rules and regulations. For instance, regarding bluefin tuna, vessels that possess either the Atlantic Tunas General or HMS Charter/Headboat permits have the ability to retain a daily bag limit of zero to three bluefin tuna, measuring 73 inches or greater curved fork length per vessel per day while the General category BFT fishery is open. Each year the General category bluefin tuna fishery season is open January 1-31 or until the quota (or subquota) is filled and is again open June 1 – December 31 or until the quota is filled. Vessel owner/operators should check with the agency via websites (www.hmspermits.gov) or telephone information lines (1-888-872-8862) to verify the bluefin tuna retention limit on any given day.

In order to characterize the catch and bycatch of green-stick gear, NMFS began a study in 2009 off of North Carolina in partnership with the North Carolina Division of Marine Fisheries and with funding from the Bycatch Reduction Engineering Program. The purpose of the study is to investigate the potential feasibility of green-stick gear as an alternative to tuna fishing gear in some areas where bycatch is problematic for other gears. Preliminary information after four observed trips of 1-3 days in length showed that the catch included yellowfin tuna, skipjack tuna, blackfin tuna, and dolphin. Bycatch during the 4 trips included one undersized bluefin tuna and one sailfish both of which were released alive and in good condition. The study is expected to be completed in 2010 and a final report produced.

4.8.2 Recent Catch and Landings

Green-stick gear has been used in the Atlantic commercial and recreational BAYS tuna and bluefin fisheries since the mid-1990s, but it was not originally included on the list of authorized HMS fishery gears (May 28, 1999; 64 FR 29090). Nevertheless, commercial landings of BAYS and bluefin tuna with green-stick gear continued in Atlantic Tunas General, Atlantic Tunas Longline, and HMS CharterHeadboat permit categories. In the Consolidated HMS FMP (October 2, 2006; 71 FR 58058), NMFS clarified the allowable uses of green-stick gear, at that time, under certain configurations that met the definition of handgear or longline which are authorized for Atlantic tunas. The allowable use of green-stick gear changed most recently with authorization of green-stick gear in 2008, as described earlier in this section.

Recent Atlantic tuna catches are presented earlier in Chapter 4 (See Table 4.1). An unknown portion of these landings were made with green-stick gear as the gear has been used in the Atlantic tuna fisheries since the mid-1990s. Reporting mechanisms that are in place do not enable the number of vessels using green-stick gear to be quantified; although, limited data allow the catch to be characterized and were presented in the 2008 SAFE Report (NMFS 2008). Data on landings specific to green-stick gear are expected to improve because a green-stick gear code was designated for use in dealer reporting systems such as trip tickets in the southeast and electronic reporting programs in the northeast. NMFS has also encouraged states to utilize the green-stick gear code in their trip ticket programs with some success. In 2009, the states of South Carolina and Florida have indicated that they will add a green-stick gear code to their trip ticket program.

A portion, but not all, of green-stick gear landings has been reported via the NMFS Southeast Region's Coastal Logbook when Atlantic Tunas General, HMS Charter/Headboat, or Atlantic Tunas Longline category fishermen also hold a NMFS Southeast Region fishing permit that requires logbook reporting. Some green-stick gear landings from 1999-2007 that were designated by hand writing "green-stick gear" as an "other" gear in the Southeast Region's Coastal Logbook were reported in the 2008 SAFE Report (NMFS 2008). Also, commercial green-stick gear catches that were reported in the PLL Logbook Program from 1999 – 2002 were reported in the 2008 SAFE Report (NMFS 2008). From 1999 - 2002, the PLL logbook format included a green-stick gear data field; however, this data field was eliminated beginning in 2003 probably because green-stick gear was not an authorized gear at the time.

Neither the Southeast Region's Coastal Logbook nor the PLL Logbook currently have a green-stick gear data field on the forms; although, green-stick gear landings are sometimes recorded on the Coastal Logbook form with "green-stick gear" hand written as an "other" gear. These data that are recorded with "green-stick gear" hand written as an "other" gear are very difficult to query in the logbook database. As a result, NMFS is unable to fully characterize the existing green-stick gear fishery with the data collection capability provided by the logbook program as it currently exists. NMFS is working to improve green-stick gear data collection in the future.

4.9 Safety Issues

The following section describes safety issues by fishery and gear type. More specific information regarding safety issues and statistics may be obtained from the following two U.S. Coast Guard (USCG) documents.

- "Analysis of Fishing Vessel Casualties – A Review of Lost Fishing Vessels and Crew Fatalities 1992-2007": http://www.offsoundings.com/WEB%20PDF/FV_Casualty_Study_92-07.pdf
- "Recreational Boating Statistics 2008": http://www.uscgboating.org/assets/1/Publications/Boating_Statistics_2008.pdf

The following are key findings from Analysis of Fishing Vessel Casualties 1992-2007. Page numbers indicate the pages where the details of the findings are described in the report.

- During this period 1,903 fishing vessels were lost. Of those vessels, 1,543 (just over 81 percent) had Certificates of Documentation, rather than state registration, (pg. 5).
- Overall, the majority of vessel losses occurred in the 17th, 8th, and 1st Coast Guard Districts (p. 6).
- There was a statistically significant drop in vessel losses for 2006 and 2007. Given the lack of regulations and the complexity of the industry, the drop is most likely due to a combination of economic, environmental, fisheries management and other regulatory factors (pp. 7-9).
- A comparison of vessel losses and safety exams indicate limited correlation (about 34 percent). Current regulations do not focus on preventing vessel loss (pg 10).
- When shown as a rate (losses/1000 vessels), losses occurred more frequently with longer vessels (pg 11).

- Fishing vessels between 11 and 30 years of age, with a valid Certificate of Documentation, sustained the greatest loss. Also, most vessels lost were constructed of wood (48 percent), steel (25 percent), or fiber reinforced plastic (FRP) (24 percent) (pg 12).
- Most fishing vessel losses (62 percent) occurred while engaged in non-fishing operations, (pg. 13).
- Together, flooding and fire were the initiating events in 56 percent the fishing vessel losses (pg. 13).
- In the 16 year period of this study there were 934 crewmember fatalities, or an average of 58 per year. For the most recent 5 years there were 197 fatalities, or an average of 39 per year (pg. 16).
- The U.S. fishing industry suffered its worst casualty in 50 years with the loss of the *ARCTIC ROSE*. The vessel disappeared in the Bering Sea the night of 1 April 2001, resulting in 1 deceased and 14 missing crewmembers (pg 16).
- Overall, the majority of deaths (58 percent) occurred in the 17th, 8th, and 1st Coast Guard Districts (pg. 16).
- Most incidents (91 percent) result in either one or two fatalities, indicating that multiple-fatality incidents are relatively rare. Thus, it would be necessary to address a relatively large number of incidents in order to reduce the fatality counts significantly (pg. 16).
- Examination of the events leading to death confirmed that water exposure was the most significant factor – 78 percent of all fatalities (pg. 16).
- Deaths from water exposure were higher along the West and Northeast coasts than in any other region because of more severe environmental conditions (pg. 18).
- Vessel-related fatalities tend to be higher in the months of October through January (pp. 19).
- When presented as a rate (fatalities per vessel lost), vessel-related fatalities were the lowest in the warmer waters of the Gulf of Mexico and along the Southeast U.S. coast (pp. 20 - 21).
- At least 2 fatalities resulted from inadequate training (pg. 20).
- Forty three percent of all vessel-related fatalities occurred on steel hulled vessels. Population data indicates that steel vessels are generally larger than vessels of other hull materials. Consequently, they are able to operate farther offshore, with larger crews. Given the higher risk factors of crew size and distance from shore, it may be appropriate to focus preventive efforts on steel vessels (pg. 22).
- Beginning in calendar year 2000, there was a significant downward shift in the number of fatalities per year. However, the trend has leveled off. To reduce the fatality rate further may require additional improvements in safety (pg. 23).
- Overall, the correlation between vessel losses and fatalities was found to be quite low. Again, current regulations focus more on preventing fatalities than preventing vessel loss (pg. 24).
- In cold waters, fishermen survive more than twice as often when lifesaving equipment is used (pg. 25).
- Loss of lives was much lower on those vessels that received a safety decal. When deaths did occur, the vessel was lost suddenly with little time to respond (pg. 26).
- A significant number of crewmember fatalities may have been prevented because Good Samaritan vessels were present for nearly 30 percent of vessels lost. Because of quick rescue, as many as 1,084 fatalities may have been prevented. Given that such vessels have

- With 23 percent of the total deaths (217 of 934), falls overboard were the second largest group of fatalities. Personal floatation device (PFD)/survival suit usage was reported with only two of those fatalities (pg. 29).
- The highest number of falls overboard fatalities occurred in the 8th District, accounting for 35 percent of their total (77 of 217). Given that the 8th District has the warmest waters and, thus, the longest survival times, it is likely that many of the fatalities were preventable with PFD's. This appears to be a region where continued emphasis on safety equipment, drills and training would be beneficial (pg. 29).
- To eliminate some fatalities, such as those that occur while the crew is asleep, it will be necessary to prevent vessel losses (various).

The following are key findings from the Recreational Boating Statistics 2008:

- In 2008, the USCG counted 4,789 accidents that involved 709 deaths, 3331 injuries and approximately $54 million dollars of damage to property as a result of recreational boating accidents.
- Over two-thirds of all fatal boating accident victims drowned, and of those, ninety (90) percent were not wearing a life jacket.
- Only ten percent of deaths occurred on boats where the operator had received boating safety instruction.
- Seven out of every ten boaters who drowned were using boats less than 21 feet in length.
- Careless/reckless operation, operator inattention, no proper lookout, operator inexperience and passenger/skier behavior rank as the top five primary contributing factors in accidents.
- Alcohol use is the leading contributing factor in fatal boating accidents; it was listed as the leading factor in 17 percent of the deaths.
- Eleven children under age thirteen lost their lives while boating in 2008. Sixty-three percent of the children who died in 2008 died from drowning.
- The most common types of vessels involved in reported accidents were open motorboats (43 percent), personal watercraft (23 percent), and cabin motorboats (15 percent).
- The 12,692,892 boats registered by the states in 2008 represent a 1.4 percent decrease from last year when 12,875,568 boats were registered.

Pelagic and Bottom Longline

Like all offshore fisheries, pelagic longlining can be dangerous. Although frequently closer to shore, bottom longline fishing can be equally dangerous. Trips are often long, the work is arduous, and the nature of setting and hauling longline gear may result in injury or death. Like all other HMS fisheries, longline fishermen are exposed to unpredictable weather. NMFS does not wish to exacerbate unsafe conditions through the implementation of regulations. Therefore, NMFS considers safety factors when implementing management measures in the PLL and BLL fishery. For example, all time/area closures are expected to be closed to fishing, but not transiting, in order to allow fishermen to take a more direct route to and from fishing grounds. NMFS seeks comments from fishermen on any safety concerns they may have. Fishermen have pointed out that, due to decreasing profit margins, they may fish with fewer, possibly less

experienced crew members or may not have the time or money to complete necessary maintenance tasks. NMFS encourages fishermen to be responsible in fishing and maintenance activities.

Purse Seine

Accidents that can occur on purse seine vessels include general injuries caused by handling fish (*e.g.*, poisoning from being stuck by fin spines), as well as accidents related to the vessels fishing operations themselves, such as, deploying the skiff or using cables and winches to move giant bluefin tuna from the net to the hold.

Commercial Handgear

The USCG conducts routine vessel safety inspections at sea on a variety of vessels throughout the year. During the General category bluefin tuna season, the USCG has been known to concentrate patrol activities on General category bluefin tuna boats. Boarding officers indicate that the majority of the commercial handgear vessels have the necessary safety equipment. However, many part-time fishermen operating smaller vessels do not meet the necessary safety standards. There have been several cases of vessels participating in the commercial handgear fishery that have capsized due to weight while attempting to boat commercial-sized bluefin tuna (measuring 73 inches or greater and weighing several hundred pounds).

Over the last few years, the USCG focused boardings on small vessels, especially those owned by "part-time" commercial handgear fishermen, and terminated several dozen trips due to the lack of safety equipment on board. If a vessel is boarded at sea and found to be lacking major survival equipment, the USCG will terminate the trip and escort the vessels back to port.

Currently, NMFS does not require proof of proper safety equipment as a condition to obtain a commercial handgear permit. Instead, NMFS informs permit applicants that commercial vessels are subject to the Fishing Vessel Safety Act of 1988 and advises them to contact their local USCG office for further information. The USCG District Boston office reports receiving 50 to 75 calls a week during the peak fishing season. Since NMFS regulations do not require USCG inspection or safety equipment in order to obtain a commercial handgear permit, NMFS cannot be certain that all participants in the commercial handgear fisheries are adequately prepared for the conditions they may encounter. NMFS is concerned about the safety of all vessels participating in the commercial handgear fisheries and continues to work with the USCG to improve communication of vessel safety requirements to commercial handgear vessel operators.

It is unlawful for Atlantic tuna vessels to engage in fishing unless the vessel travels to and from the area where it will be fishing under its own power and the person operating that vessel brings any bluefin tuna under control (secured to the catching vessel or on board) with no assistance from another vessel, except when shown by the operator that the safety of the vessel or its crew was jeopardized or other circumstances existed that were beyond the control of the operator (50 CFR Part 635.71 (b)(1)). NMFS Enforcement and USCG boarding officers have

recently encountered vessels participating in the bluefin tuna fishery that are unable to transit to and from the fishing grounds due to their limited fuel capacity. Occasionally these smaller vessels will work in cooperation with a larger documented vessel to catch a bluefin tuna. Others have been observed leaving lifesaving equipment at the dock to make room for extra fuel, bait, and staples. NMFS is concerned that use of such inadequately equipped vessels jeopardizes crew in that the vessel may not be able to safely return to shore without assistance of the larger vessel due to insufficient fuel or to adverse weather conditions.

Over the last couple of years, NMFS has received a number of vessel permit applications from kayak owner/operators. In addition to the requirement mentioned above, NMFS only issues permits to vessels that possess a USCG documentation number, a state registration number, or a foreign registration number (recreational permit only). As kayaks typically do not require such documentation, NMFS has denied all applications for a permit for kayaks to date.

NMFS also has concerns regarding individuals embarking on HMS trips by themselves. Recently there have been a few incidents of fishermen either severely injuring themselves or dying while pursing HMS by themselves. Certain hazardous situations could be mitigated by having an additional person onboard the vessel while conducting a trip targeting large pelagic species. NMFS encourages vessel owner/operators to practice safe fishing techniques.

NMFS will consider all safety comments and information, including those from the USCG and NMFS Enforcement, when planning future General category effort control schedules and will discuss these issues in future meetings with the HMS Advisory Panel.

Recreational Handgear

The USCG does not maintain statistics on boating accidents, rescue, or casualty data specifically pertaining to particular recreational fisheries as it does for the commercial industry. As a result, this document contains only minimal information regarding safety in recreational HMS fisheries. However, the USCG does compile statistics on the total number of recreational boating accidents and casualties, independent of the activity or fishery in which they are engaged (Table 4.30). Three common situations often place HMS recreational HMS anglers in potential danger. Individuals in small vessels often venture out farther than their vessels are designed to travel without proper navigational equipment and may encounter rougher water than their boats are designed to withstand. Since fishermen targeting HMS species, particularly marlin, often travel 75 to 100 miles offshore, having a properly equipped, well-maintained vessel of adequate size is very important for the safety of recreational HMS constituents. Additionally, as the recreational swordfish fishery off the southeastern coast of Florida occurs at night and usually in small boats ranging from 23 to 40 feet in length, it presents other unique risks. Shipping traffic regularly transits through areas utilized by the recreational swordfish fleet, which can lead to collisions if someone is not on watch at all times. Finally, another frequent safety concern of the USCG is the potential for someone to fall overboard when on the flying bridge.

Table 4.30 Total 2008 Reported Recreational Boating Accident Types. Source: USCG Boating Statistics, 2008.

2008 Primary Accident Type	# Accidents	# Deaths	# Injuries	Total Property Damage
Total	4789	709	3331	$54,282,587
Capsizing	348	189	227	$1,426,526
Carbon Monoxide Exposure	18	11	40	$0
Collision with Fixed Object	446	53	328	$4,696,802
Collision with Floating Object	59	5	30	$769,231
Collision with Another Vessel	1237	60	856	$8,584,700
Departed Vessel	87	37	41	$67,315
Ejected from Vessel	123	17	105	$514,877
Electrocution	0	0	0	$0
Fall in Vessel	140	2	148	$65,270
Fall on Vessel	62	1	66	$7,500
Falls Overboard	431	188	257	$502,615
Fire/Explosion (fuel)	136	1	89	$4,542,417
Fire/Explosion (non-fuel)	78	2	12	$3,183,410
Fire/Explosion (unknown origin)	25	2	10	$15,980,500
Flooding/Swamping	475	89	179	$5,743,606
Grounding	322	13	241	$3,433,256
Sinking	16	2	3	$471,184
Skier Mishap	383	10	397	$4,826
Struck by Vessel	37	2	41	$2,400
Struck by Propeller	83	5	80	$600
Struck Submerged Object	154	5	70	$4,077,332
Other	123	9	111	$207,720
Unknown	6	6	0	$500

Personal floatation devices (PFDs) can reduce the risk of death or serious injury when they are accessible and used properly. Table 4.31provides information regarding boating accidents and the presence of PFDs onboard vessels.

Table 4.31 Boating Accidents and Personal Floatation Device Usage in 2008. Source: USCG Boating Statistics, 2008.

Life Jackets on Vessels	Approved, Accessible	4548	405	
	Approved, Not Accessible	86	21	
	Approved, Not known if accessible	469	40	
	Not Onboard	223	131	
	Unknown	1021	112	
Life Jacket Usage Among Cause of Death Categories	**Cause of Death**	**Worn**	**Not Worn**	**Unknown if Worn**
	Carbon Monoxide	0	11	0
	Cardiac arrest	1	6	0
	Drowning	46	459	5
	Hypothermia	7	5	0
	Trauma	33	90	1
	Other	1	7	0
	Unknown	2	32	3
	Totals	90	610	9

Buoy Gear and Greenstick Gear

At this time, other than the general concerns listed above, NMFS is not aware of any specific safety issues associated with this fishery. NMFS does not require proof of proper safety equipment as a condition to obtain a commercial permit. Instead, NMFS informs permit applicants that commercial vessels are subject to the Fishing Vessel Safety Act of 1988 and advises them to contact their local USCG office for further information.

4.10 Fishery Data: Landings by Species

The following tables of Atlantic HMS landings are taken from the 2009 National Report of the United States to ICCAT (ANN-043) (NMFS, 2009). The purpose of this section is to provide a summary of recent domestic landings of HMS by gear and species allowing for interannual comparisons. Landings for sharks were compiled from the most recent stock assessment documents and updates provided from the SEFSC.

Table 4.32 U.S. Landings (mt) of Atlantic Bluefin Tuna by Gear and Area, 2001-2008. Source: NMFS, 2009.

Area	Gear	2001	2002	2003	2004	2005	2006	2007	2008
NW Atlantic	Longline**	17.7	7.8	36.1	63.6	72.7	104.4	70.7	124.7
	Handline	9.0	4.5	2.5	1.5	2.3	0.3	0.0	0.6
	Purse seine	195.9	207.7	265.4	31.8	178.3	3.6	27.9	0.0
	Harpoon	101.9	55.5	87.9	41.2	31.5	30.3	22.5	30.2
	*Rod and reel (>145 cm LJFL)	993.4	1,008.4	676.4	348.0	170.4	217.2	235.4	305.7
	*Rod and reel (<145 cm LJFL)	249.3	519.3	314.6	370.2	254.4	158.2	398.6	352.2
	Unclassified	0.5	0.0	0.0	0.2	0.0	0.0	0.0	0.3
Gulf of Mexico	Longline	19.8	32.8	80.0	102.8	118.5	88.1	81.2	111.6
	*Rod and reel	1.7	1.5	0.0	0.0	0.0	0.6	0.0	0.0
NC Area 94a	Longline	0.0	9.3	17.8	13.7	20.3	12.1	12.4	11.5
All Areas	**All Gears**	**1,582.8**	**1,846.8**	**1,480.7**	**973.0**	**848.4**	**614.8**	**848.7**	**936.7**

* Rod and Reel catches and landings represent estimates of landings and dead discards when available based on statistical surveys of the U.S. recreational harvesting sector.
**from 2003-2008, this includes landings and estimated discards from scientific observer and logbook sampling programs.

Table 4.33 U.S. Landings (mt) of Atlantic Yellowfin Tuna by Gear and Area, 2001-2008. Source: NMFS, 2009.

Area	Gear	2001	2002	2003	2004	2005	2006	2007	2008
NW Atlantic	Longline	631.8	400.0	275.3	658.9	394.2	701.7	752.8	460.5
	Rod and reel*	3,690.5	2,624	4,672.1	3,433.7	3,504.8	4,649.2	2,756.0	657.1
	Troll	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.4
	Gillnet	7.6	5.0	0.9	3.2	0.1	4.7	4.2	0.6
	Trawl	2.7	0.0	2.2	1.6	0.2	0.7	2.4	0.0
	Handline	242.5	137.0	149.1	213.2	105.1	105.1	118.1	30.1
	Trap	0.1	0.0	0.3	0.0	0.01	0.0	0.0	0.05
	Unclassified	6.8	**	0.1	10.6	3.8	3.9	7.0	1.4
Gulf of Mexico	Longline	1,505.5	2,109.0	1,835.8	1,811.9	1,210.9	1,128.5	1,377.7	756.5
	Rod and reel*	494.2	200.0	640.0	247.1	146.9	258.4	227.6	366.3
	Handline	43.4	100.0	39.9	28.3	45.5	49.9	34.3	11.2
	Gillnet	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Unclassified	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0
Caribbean	Longline	23.1	12.0	5.6	4.5	140.6	179.7	255.6	107.1
	Handline	14.3	7.0	9.0	7.0	9.7	7.8	9.1	3.7
	Gillnet	0.3	0.0	0.02	0.06	**	0.0	0.0	0.04
	Trap	0.3	0.0	0.2	0.1	**	0.4	0.0	0.0
NC Area 94a	Longline	3.5	0.0	5.2	0.08	0.5	0.0	1.8	0.4
SW Atlantic	Longline	36.2	52.0	42.0	16.8	0.0	0.0	0.0	0.0
All Areas	**All Gears**	**6,702.8**	**5,646.0**	**7,677.7**	**6,515.7**	**5,568.1**	**7,090.0**	**5,529.5**	**2,407.2**

* Rod and Reel catches and landings represent estimates of landings and dead discards based on statistical surveys of the U.S. recreational harvesting sector.
** $\leq$ 0.05 mt

Table 4.34 U.S. Landings (mt) of Atlantic Skipjack Tuna by Gear and Area, 2001-2008. Source: NMFS, 2009.

Area	Gear	2001	2002	2003	2004	2005	2006	2007	2008
NW Atlantic	Longline	0.1	**	0.9	0.1	0.05	0.04	0.0	0.1
	Rod and reel*	32.9	23.3	34.1	27.3	8.1	34.6	27.4	21.0
	Gillnet	3.6	**	0.9	16.7	2.2	0.2	0.05	0.04
	Trawl	0.2	**	0.5	0.2	0.07	0.7	0.005	0.003
	Handline	0.2	0.2	0.2	0.6	0.9	0.2	0.3	0.4
	Trap	0.0	**	1.5	0.006	0.0	0.3	0.0	0.0
	Pound net	0.0	0.0	0.1	0.0	0.0	0.5	0.0	0.0
	Unclassified	0.0	0.0	0.1	0.2	0.01	0.06	0.6	0.5
Gulf of Mexico	Longline	0.2	**	0.05	0.3	0.3	0.0	0.0	0.05
	Rod and reel*	16.1	13.2	11.1	6.3	3.1	6.4	23.9	16.3
	Handline	0.0	0.0	0.04	0.2	0.02	0.0	0.2	0.06
Caribbean	Longline	4.0	2.5	0.4	0.3	0.2	0.2	0.02	1.3
	Gillnet	1.6	0.6	0.4	0.3	0.06	0.02	0.0	0.01
	Rod and reel*	NA	NA	15.7	40.4	3.9	7.7	0.2	11.3
	Handline	10.3	12.5	12.9	9.6	10.9	10.0	13.7	16.0
	Trap	0.4	0.7	0.2	0.02	0.1	0.05	0.0	0.0
All Areas	**All Gears**	**69.6**	**53.0**	**79.1**	**102.5**	**29.9**	**61.0**	**66.5**	**67.1**

* Rod and Reel catches and landings represent estimates of landings and dead discards based on statistical surveys of the U.S. recreational harvesting sector.
** $\leq$ 0.05 mt

Table 4.35 U.S. Landings (mt) of Atlantic Bigeye Tuna by Area and Gear, 2001-2008. Source: NMFS, 2009.

Area	Gear	2001	2002	2003	2004	2005	2006	2007	2008
NW Atlantic	Longline	506.1	328.6	169.2	267.0	272.9	469.4	331.9	380.2
	Rod and reel*	366.2	49.6	188.5	94.6	165.0	422.3	126.8	70.9
	Troll	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.8
	Gillnet	0.2	0.0	0.07	0.0	0.0	0.2	1.0	0.04
	Handline	33.2	13.8	6.0	3.3	6.2	21.5	16.8	6.9
	Trawl	0.4	0.5	0.03	0.9	0.6	0.0	0.4	0.0
	Unclassified	1.8	0.0	0.0	0.5	0.6	0.8	0.9	2.1
Gulf of Mexico	Longline	15.3	41.0	26.2	20.2	25.2	37.7	37.0	14.0
	Rod and reel*	0.0	0.0	0.0	6.0	0.0	24.3	0.0	0.0
	Handline	0.5	0.6	0.3	0.2	0.1	1.5	0.01	0.0
Caribbean	Longline	31.9	29.7	7.0	3.5	6.9	10.5	3.4	8.9
	Handline	0.0	0.0	0.0	0.0	0.04	0.0	0.0	0.0
NC Area 94a	Longline	61.0	45.2	36.9	5.0	6.9	3.0	8.4	4.6
SW Atlantic	Longline	68.2	91.3	44.6	14.4	0.0	0.0	0.0	0.0
All Areas	**All Gears**	**1,084.8**	**600.3**	**478.8**	**416.0**	**484.4**	**991.4**	**527.3**	**488.5**

* Rod and Reel catches and landings represent estimates of landings and dead discards based on statistical surveys of the U.S. recreational harvesting sector.
** $\leq$= 0.05

Table 4.36 U.S. Landings (mt) of Atlantic Albacore Tuna by Gear and Area, 2001-2008. Source: NMFS, 2009.

Area	Gear	2001	2002	2003	2004	2005	2006	2007	2008
NW Atlantic	Longline	171.7	124.0	95.7	106.6	88.9	84.8	109.9	107.2
	Gillnet	3.3	2.6	0.1	4.9	6.0	2.1	1.0	2.1
	Handline	1.7	3.9	1.7	6.1	3.0	2.6	5.4	0.2
	Trawl	0.0	0.3	0.02	2.7	1.7	1.1	0.3	0.01
	Troll	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2
	Rod and reel*	122.3	323.0	333.8	500.5	356.0	284.2	393.6	125.2
	Unclassified	0.1	0.0	0.0	3.6	9.9	5.6	4.2	2.0
Gulf of Mexico	Longline	4.9	9.5	4.4	9.9	6.9	7.6	15.4	10.2
	Rod and reel*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Handline	0.0	0.0	0.01	0.0	0.1	0.07	0.0	0.0
Caribbean	Longline	8.7	8.4	3.9	3.2	12.1	10.5	1.2	0.4
	Gillnet	0.5	**	0.04	0.005	0.002	0.0	0.0	0.0
	Trap	0.3	0.6	0.2	0.0	0.0	0.0	0.0	0.0
	Handline	2.2	2.7	2.6	2.1	1.1	0.4	0.2	0.4
NC Area 94a	Longline	6.1	4.8	1.6	0.2	0.6	0.03	0.3	0.8
SW Atlantic	Longline	2.4	8.3	2.0	0.5	0.0	0.0	0.0	0.0
All Areas	**All Gears**	**324.2**	**488.1**	**446.1**	**646.6**	**488.0**	**399.0**	**532.1**	**248.1**

* Rod and Reel catches and landings represent estimates of landings and dead discards based on statistical surveys of the U.S. recreational harvesting sector.
** $\leq$ 0.05 mt

Table 4.37 U.S. Catches and Landings (mt) of Atlantic Swordfish by Gear and Area, 2001-2008. Source: NMFS, 2009.

Area	Gear	2001	2002	2003	2004	2005	2006	2007	2008
NW Atlantic	*Longline	1,220.8	1,132.8	1,341.3	1,169.7	1,096.2	1,165.2	1,649.6	1,622.5
	Gillnet	0.0	0.1	0.0	0.05	0.0	0.0	0.2	0.0
	Handline	8.6	8.8	10.8	18.7	34.4	32.5	125.2	83.2
	Trawl	2.5	3.9	5.6	8.3	8.2	3.5	6.5	7.6
	Unclassified	1.8	0.1	1.6	0.0	0.5	0.2	0.2	0.2
	Unclassified discards				3.9	4.2	5.1	5.5	4.1
	Harpoon	7.4	2.8	0.0	0.5	0.0	0.3	0.0	0.0
	***Rod and reel	1.5	21.5	5.9	24.3	53.1	50.6	65.9	56.7
	Trap	0.0	**	0.06	0.0	0.0	0.0	0.0	0.0
Gulf of Mexico	*Longline	494.6	549.1	507.6	453.0	480.9	328.1	457.7	361.6
	Handline	0.3	2.9	9.8	4.0	0.3	0.1	0.2	1.2
	Rod and reel			0.03	0.5	1.5	2.1	2.3	19.0
	Unclassified			3.4	0.0	0.2	0.0	0.0	0.0
	Unclassified discards				0.03	3.9	2.7	5.5	4.6
Caribbean	*Longline	347.0	329.0	274.5	295.9	143.5	88.9	27.8	57.9
	Trap	**	0.1	0.0	0.0	0.0	0.0	0.0	0.0
	Rod and reel			0.0	0.4	6.6	0.0	0.0	0.0
	Handline			0.02	0.006	0.0	0.0	0.0	0.0
	Unclassified discards			0.2	0.08	0.7	0.0	0.0	0.0
NC Atlantic	*Longline	420.6	587.9	632.8	599.9	552.2	378.6	338.9	311.6
SW Atlantic	*Longline	43.2	199.9	20.5	15.7	0.0	0.0	0.0	0.0
All Areas	**All Gears**	**2,548.3**	**2,838.9**	**2,814.13**	**2,595.1**	**2,387.6**	**2,057.9**	**2,682.8**	**2,530.3**

* Includes landings and estimated dead discards from scientific observer and logbook sampling programs.
** $\leq$ = 0.5 mt
*** Rod and Reel catches and landings represent estimates of landings and dead discards based on statistical surveys of the U.S. recreational harvesting sector.

Table 4.38 Commercial landings of Atlantic Large Coastal Sharks in lb dw: 1999-2008. Sources: Cortés 2003; Cortés and Neer 2002, 2005; Cortés pers. comm.

Large Coastal Sharks	2000	2001	2002	2003	2004	2005	2006	2007	2008
Basking**	0	0	0	0	0	0	0	0	0
Bignose*	672	1,442	0	318	0	98	46	0	104
Bigeye sand tiger**	0	0	0	0	0	0	0	0	0
Blacktip	1,633,919	1,135,199	1,099,194	1,474,362	1,092,600	894,768	1,255,255	1,091,502	573,723
Bull	24,980	27,037	40,463	93,816	49,556	118,364	173,375	154,945	186,882
Caribbean reef*	0	1	0	0	0	0	0	0	0
Dusky*	205,746	1,973	8,779	23,288	1,025	874	4,209	2,064	0
Galapagos*	0	0	0	0	0	0	0	0	0
Hammerhead, great	0	0	0	0	0	0	0	0	0
Hammerhead, scalloped	0	0	0	0	0	0	0	0	0
Hammerhead, smooth	0	0	0	0	92	54	150	0	358
Hammerhead, unclassified	35,060	69,356	108,160	150,368	116,546	182,387	141,068	65,232	55,907
Large coastal, unclassified	16,575	172,494	147,359	51,433	0	0	0	0	0
Lemon	45,269	24,453	56,921	80,688	67,810	74,436	65,097	72,583	53,427
Narrowtooth*	0	0	0	0	0	0	0	0	0
Night*	0	0	0	20	0	0	0	0	0

Large Coastal Sharks	2000	2001	2002	2003	2004	2005	2006	2007	2008
Nurse	429	387	69	70	317	152	2,258	15	58
Sandbar	1,491,908	1,407,550	1,863,420	1,425,628	1,223,241	1,246,966	1,501,277	691,928	86,640
Sand tiger**	6,554	1,248	409	624	1,832	4,149	3,555	210	0
Silky	31,959	14,197	30,731	51,588	11,808	18,237	16,173	16,496	4,794
Spinner	14,473	6,970	8,447	12,133	14,806	47,670	96,259	17,888	123,660
Tiger	24,443	26,973	16,115	18,536	30,976	39,387	50,749	34,169	29,712
Whale**	0	0	0	0	0	0	0	0	0
White**	1,201	26	0	1,454	58	0	122	0	0
Unclassified, assigned to large coastal	92,117	525,661	771,450	908,077	603,229	519,654	499,069	182,240	247,639
Unclassified, fins	87,820	23,988	142,565	181,431	137,375	135,774	152,111	98,010	55,482
Total (excluding fins)	3,713,125 (1,684 mt dw)	3,414,967 (1,549 mt dw)	4,151,594 (1,883 mt dw)	4,292,403 (1,947 mt dw)	3,213,896 (1,458 mt dw)	3,147,196 (1,428 mt dw)	3,808,662 (1,728 mt dw)	2,329,272 (1,057 mt dw)	1,362,904 (618 mt dw)

* indicates species that were prohibited in the commercial fishery as of June 21, 2000.
** indicates species that were prohibited as of April 1997.

Table 4.39 Commercial landings of Atlantic Small Coastal Sharks in lb dw: 1999-2008. Sources: Cortés and Neer, 2002, 2005; Cortés, 2003; Cortés pers. comm.

Small coastal sharks	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Atlantic angel*	0	97	0	495	1,397	818	3,587	500	29	91
Blacknose	137,619	178,083	160,990	144,615	131,511	68,108	120,320	187,907	91,438	134,255
Bonnethead	58,150	69,411	63,461	36,553	38,614	29,402	33,295	33,911	53,638	60,970
Finetooth	285,230	202,572	303,184	185,120	163,407	121,036	107,327	80,536	171,099	80,833
Sharpnose, Atlantic	244,356	142,511	196,441	213,301	190,960	230,880	375,881	520,028	334,421	324,622
Sharpnose, Atlantic, fins	0	0	209	0	0	0	0	0	0	0
Sharpnose, Caribbean*	2,039	353	205	0	0	0	0	0	0	0
Unclassified small coastal	336	0	51	35,831	8,634	1,407	9,792	471	3,474	23,077
Total (excluding fins)	727,730 (330 mt dw)	593,027 (269 mt dw)	724,332 (329 mt dw)	615,915 (279 mt dw)	534,523 (242 mt dw)	451,651 (205 mt dw)	650,202 (295 mt dw)	823,353 (373 mt dw)	654,099 (297 mt dw)	623,848 (283 mt dw)

* indicates species that were prohibited in the commercial fishery as of June 21, 2000.

Table 4.40 Commercial landings of Atlantic Pelagic Sharks in lb dw: 1999-2008. Sources: Cortés and Neer 2002, 2005; Cortés 2003; Cortés pers. comm**.**

Pelagic Sharks	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Bigeye thresher*	18,683	4,376	330	0	0	719	267	68	0	0
Bigeye sixgill*	0	0	0	0	0	0	0	0	0	0
Blue shark	886	3,508	65	137	6,324	423	0	588	0	3,229
Mako, longfin*	3,394	6,560	9,453	3,008	1,831	1,827	403	2,198	2,039	1,896
Mako, shortfin	150,073	129,088	171,888	159,840	151,428	217,171	154,187	102,901	165,120	120,255
Mako, unclassified	56,625	74,690	73,556	58,392	33,203	50,978	35,241	28,557	38,170	39,661
Oceanic whitetip	1,480	657	922	1,590	2,559	1,082	713	338	787	1,899
Porbeagle	5,650	5,272	1,152	2,690	1,738	5,832	2,452	3,810	3,370	5,259
Sevengill*	0	0	0	0	0	0	0	0	0	0
Sixgill*	0	0	0	0	0	0	0	0	0	0
Thresher	96,266	81,624	56,893	53,077	46,502	44,915	24,280	33,299	49,257	47,528
Unclassified, pelagic	0	233	0	5,965	79,439	0	0	571	0	0
Unclassified, assigned to pelagic	41,006	40,951	31,636	182,983	314,300	356,522	18,057	12,936	5,022	14,819
Unclassified, pelagic, fins	2,408	3,746	12,239	0	0	41	0	0	0	0
Total (excluding fins)	376,471 (171 mt dw)	350,705 (159 mt dw)	345,895 (157 mt dw)	467,682 (212 mt dw)	637,324 (289 mt dw)	679,469 (308 mt dw)	235,600 (107 mt dw)	185,266 (84 mt dw)	263,765 (120 mt dw)	234,546 (106 mt dw)

* indicates species that were prohibited in the commercial fishery as of June 21, 2000.

Chapter 4 References

Arocha, F., Lee, D.W. 1996. Maturity at size, reproductive seasonality, spawning frequency, fecundity and sex ratio in swordfish from the Northwest Atlantic. ICCAT Col. Vol. Sci. Pap. Vol. 45(2): 350-357.

Baremore, I.E., J.K. Carlson, L.D. Hollensead, and D.M. Bethea. 2007. Catch and Bycatch in the U.S. Southeast Gillnet Fisheries: 2007. NOAA Technical Memorandum NMFS-SEFSC-565, 19 p.

Burgess, G.H. and A. Morgan. 2002. Commercial shark fishery observer program; support for an observer program monitoring the directed commercial shark fishery in the eastern Gulf of Mexico and Atlantic Ocean. Final report to Highly Migratory Species Division, National Marine Fisheries Service. Award No. NA06FM0194.

Burgess, G.H. and A. Morgan. 2003. Commercial shark fishery observer program: Support for an observer program monitoring the directed commercial shark fishery in the eastern Gulf of Mexico and Atlantic Ocean. Final report to the Highly Migratory Species Division, NMFS, Award No. NA06FM0194. 87 pp.

Burgess, G.H. and A. Morgan. 2004. Commercial shark fishery observer program; an observer program report on the monitoring of the directed commercial shark fishery in the eastern Gulf of Mexico and South Atlantic 2003(2) fishing season. Final report to Highly Migratory Species Division, National Marine Fisheries Service. Award No. NA03NMF4540075.

Carlson, J. K. and I. Baremore. 2003. The directed shark gillnet fishery: catch and bycatch, 2003. National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Southeast Fisheries Science Center, Panama City, FL. Sustainable Fisheries Division Contribution PCB-03/07. 8pp.

Carlson, J.K. and D. M. Bethea. 2007. Catch and bycatch in the shark gillnet fishery: 2005-2006. NOAA Technical Memorandum NMFS-SEFSC-552, 26 p.

Fairfield-Walsh, C. and L. Garrison. 2007. Estimated bycatch of marine mammals and turtles in the U.S. Atlantic pelagic longline fleet during 2006. NOAA Technical Memorandum. NMFS-SEFSC-560. 54 pp.

Fairfield, C.P. and L.P. Garrison. 2008. Estimated bycatch of marine mammals and turtles in the U.S. Atlantic pelagic longline fleet during 2007. NOAA Technical Memorandum. NMFS-SEFSC-572. 62 pp.

Garrison, L. P. 2003. Estimated bycatch of marine mammals and turtles in the U.S. Atlantic Pelagic Longline Fleet during 2001-2002. NOAA Technical Memorandum NMFS-SEFSC-515, 52p.

Garrison, L. P. and P.M. Richards. 2004. Estimated bycatch of Marine Mammals and Turtles in the U.S. Atlantic Pelagic Longline Fleet During 2003. NOAA Technical Memorandum NMFS-SEFSC-527: 57p.

Garrison, L.P. 2005. Estimated bycatch of marine mammals and turtles in the U.S. Atlantic pelagic longline fleet during 2004. NOAA Technical Memorandum. NMFS-SEFSC-531. 52 pp.

Garrison, L.P., Stokes, L. and C. Fairfield. 2009. Estimated Bycatch of Marine Mammals and Sea Turtles in the U.S. Atlantic Pelagic Longline Fleet During 2008. NOAA Technical Memorandum NOAA NMFS-SEFSC-591. 63p.

Hale, L.F. and J.K. Carlson. 2007. Characterization of the Shark Bottom Longline Fishery: 2005-2006. National Oceanic and Atmospheric Administration Technical Memorandum. NMFS-SEFSC-554. 25pp.

Hale, L.F., L.D. Hollensead, and J. K. Carlson. 2007. Characterization of the shark bottom longline fishery: 2007. NOAA Technical Memorandum NMFS-SEFSC 564, 25 p.

Hale, L.F., S.J.B. Gulak, and J.K. Carlson. 2009. Characterization of the shark bottom longline fishery, 2008. NOAA Technical Memorandum NMFS-SEFSC-586, 23 p.

Keene, Kenneth F., Lawrence R. Beerkircher, and Dennis W. Lee. 2007. SEFSC Pelagic Observer Program Data Summary For 1992-2004. Miami, FL. NOAA Technical Memorandum NMFS-SEFSC-562, 26 p.

National Research Council. 1990. Decline of the Sea Turtles: Causes and Prevention. Committee on Sea Turtle Conservation; Board on Environmental Studies and Technology and Toxicology; Board on Biology; Committee on Life Sciences. ISBN 0-309-04247-X. 260 p.

NMFS. 2007. Estimated Takes of Protected Species in the Commercial Directed Shark bottom Longline Fishery 2006. NMFS Southeast Fisheries Science Contribution PRBD 07/08-05. 15 p.

NMFS. 2008. Stock Assessment and Fishery Evaluation (SAFE) Report For Atlantic Highly Migratory Species. Highly Migratory Species Management Division, 1315 East West Highway, Silver Spring, MD 20910. 446 pp.

NMFS. 2009. National Report of the United States (to ICCAT): 2009. NOAA, U.S. Department of Commerce, Silver Spring, MD. NAT/03/06.

Passerotti, M.S. and J.K. Carlson. 2009. Catch and Bycatch in U.S. Southeast Gillnet Fisheries, 2008. NOAA Technical Memorandum NMFS-SEFSC-583. 19 p.

Richards, P.M. 2007. Estimated takes of protected species in the commercial directed shark bottom longline fishery 2003, 2004, and 2005. NMFS Southeast Fisheries Science Contribution PRD 06/07-08. 21 p.

Walsh, C.F. and L.P. Garrison. 2006. Estimated bycatch of marine mammals and turtles in the U.S. Atlantic pelagic longline fleet during 2005. NOAA Technical Memorandum. NMFS-SEFSC-539. 51 pp.

Wescott, W. 1996. The Wanchese green-stick tuna rig. North Carolina Sea Grant. UNC-SG-96-04.

Yeung, C. 2001. Estimates of marine mammal and marine turtle bycatch by the U.S. Atlantic pelagic longline fleet in 1999-2000. NOAA Technical Memorandum NMFS-SEFSC-467, 43p.

5.0 ECONOMIC STATUS OF HMS FISHERIES

The review of each rule, and of Atlantic HMS fisheries as a whole, is facilitated when there is an economic baseline against which the rule or fishery may be evaluated. In this analysis, NMFS used the past eight years of data to facilitate the analysis of trends. It also should be noted that all dollar figures are reported in nominal dollars (*i.e.*, current dollars). If analysis of real dollar (*i.e.*, constant dollar) trends controlled for inflation is desired, price indexes for 2001 to 2008 are provided in Table 5.1. To determine the real price in base year dollars, divide the base year price index by the current year price index, and then multiply the result by the price that is being adjusted for inflation. From 2001 to 2008, the Consumer Price Index (CPI-U) indicates that prices have risen by 21.6 percent, the Gross Domestic Product (GDP) Implicit Price Deflator indicates that prices have risen 19.8 percent, and the Producer Price Index (PPI) for unprocessed finfish indicates a 71.3 percent rise in prices. From 2006 to 2007, the CPI, GDP Deflator, and the PPI for unprocessed finfish indicate prices changed by 2.8 percent, 2.8 percent, and -4.9 percent respectively. From 2007 to 2008, the CPI, GDP Deflator, and the PPI for unprocessed finfish indicate prices changed by 3.9 percent, 2.2 percent, and -5.2 percent respectively.

Table 5.1 Inflation Price Indexes. The CPI-U is the standard Consumer Price Index for all urban consumers (1982-1984=100) produced by U.S. Department of Labor Bureau of Labor Statistics. The source of the Producer Price Index (PPI) for unprocessed finfish (1982=100) is also the Bureau of Labor Statistics. The Gross Domestic Product Implicit Price Deflator (2005=100) is produced by the U.S. Department of Commerce Bureau of Economic Analysis and obtained from the Federal Reserve Bank of St. Louis (http://www.stlouisfed.org/).

Year	CPI-U	GDP Deflator	PPI Unprocessed Finfish
2001	177.1	90.6	176.1
2002	179.9	92.1	201.5
2003	184.0	94.1	195.8
2004	188.9	96.8	224.1
2005	195.3	100.0	253.1
2006	201.6	103.3	334.6
2007	207.3	106.2	318.1
2008	215.3	108.5	301.6

5.1 Commercial Fisheries[2]

In 2008, 8.3 billion pounds valued at $4.4 billion were landed for all fish species by U.S. fisherman at U.S. ports. In 2007, 9.2 billion pounds valued at $4.1 billion were landed for all fish species by U.S. fisherman at U.S. ports. The overall value of landings between 2007 and 2008 increased by five percent. The total value of commercial HMS landings in 2008 was $36.8

[2] All the information and data presented in this section were obtained from NMFS 2008b.

million (Table 5.4). The 2008 ex-vessel price index indicated that 26 of the 32 finfish species groups tracked exhibited increasing ex-vessel prices, five species groups had decreasing ex-vessel prices, and one species group remained unchanged since 2007. The total edible finfish ex-vessel price index for 2008 was up 57 percent from 2007. The yellowfin tuna price index had the largest increase (158 percent).

The estimated value of the 2008 domestic production of all fishery products was $7.6 billion. This is $794.9 million less than the estimated value in 2007. The total import value of fishery products was $28.5 billion in 2008. This is a decrease of $320.5 million from 2007. The total export value of fishery products was $23.4 billion in 2008. This is an increase of $3.3 billion from 2007. In comparison, the total export value in 1996 was only $8.7 billion.

5.1.1 Ex-Vessel Prices

The average ex-vessel prices per pound dressed weight (dw) for 2001 to 2008 by area, Atlantic HMS, and major fishing gear types are summarized in **Error! Reference source not found.**. The average ex-vessel prices per lb dw for 2001 to 2008 by species and area are summarized in Table 5.3. For both of these tables, prices are reported in nominal dollars. The ex-vessel price depends on a number of factors including the quality of the fish (*e.g.*, freshness, fat content, method of storage), the weight of the fish, the supply of fish, and consumer demand.

Error! Reference source not found. and Table 5.3 indicate that the average ex-vessel prices for bigeye tuna have generally increased since 2001. Price changes from 2007 to 2008 were above average in all regions, except for the Mid-Atlantic. The gears used also influenced the average price of bigeye tuna.

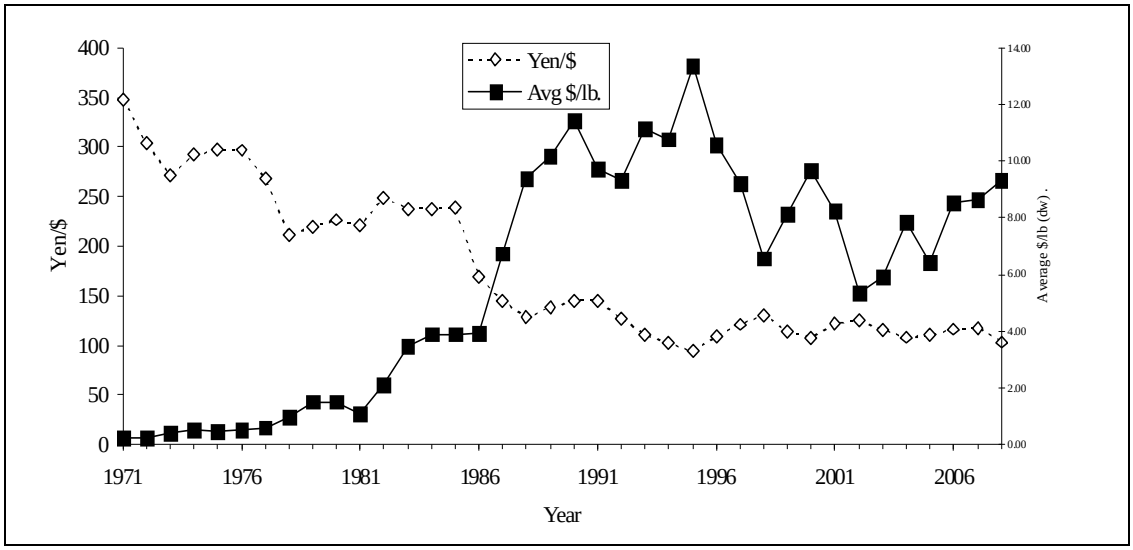

Figure 5.1 Average Annual Yen/$ Exchange Rate and Average U.S. BFT Ex-vessel $/lb (dw) for All Gears: 1971-2008. Source: Federal Reserve Bank (www.stls.frb.org) and Northeast Regional Office.

Average ex-vessel prices for bluefin tuna have been rising since 2001. The gear used made a difference in the ex-vessel price (**Error! Reference source not found.**). Bluefin tuna caught with handgear had higher average prices than those caught with longline. This trend has been fairly consistent over the years between 2001 and 2008. The ex-vessel prices for bluefin tuna can be influenced by many factors, including market supply and the Japanese Yen/U.S. Dollar (¥/$) exchange rate. Figure 5.1 shows the average ¥/$ exchange rate, plotted with average ex-vessel bluefin tuna prices, from 1971 to 2008.

The average ex-vessel prices for yellowfin tuna have increased in 2008 in all regions (Table 5.3). The average ex-vessel price for other tunas increased in all regions in 2007 (Table 5.3). The average price of other tunas increased in the South Atlantic and Gulf of Mexico regions in 2008. The type of gear used did not appear to consistently influence the average ex-vessel prices of other tuna. Average ex-vessel prices for swordfish decreased in 2008 in all regions, except the Gulf of Mexico (Table 5.3).

The average ex-vessel price for large coastal sharks (LCS) increased in all regions in 2008 (Table 5.3). The average ex-vessel prices for pelagic sharks decreased in the Mid-Atlantic and North Atlantic regions in 2008 (Table 5.3). The average ex-vessel prices forsmall coastal sharks (SCS) increased from 2007 to 2008 in the South Atlantic and Gulf of Mexico regions, but decreased in the Mid-Atlantic region (Table 5.3). Gear type did not consistently affect the ex-vessel price of small coastal sharks in 2008 (**Error! Reference source not found.**). There were major changes to the shark fishery in 2008. It was the first year that fins were required to be naturally attached to sharks. Fishermen commented that meat prices would be affected by this change. However, the ex-vessel price data for shark meat in 2008 did not indicate any decreasing trends in shark meat prices. NMFS will continue to monitor market prices to determine the impacts from the fins on requirement. Shark fin prices increased in the Gulf of Mexico, but decreased in the South Atlantic.

Table 5.2 **Average Ex-vessel Prices per lb dw for Atlantic HMS by Gear and Area.** Source: Dealer weighout slips from the Southeast Fisheries Science Center, Northeast Fisheries Science Center, and bluefin tuna dealer reports from the Northeast Regional Office. HND=Handline, harpoon, spears, trot lines, and trolls, PLL=Pelagic longline, BLL=Bottom longline, Net=Gillnets and pound nets, TWL=Trawls, SEN=Seines, TRP=Pots and traps, DRG=Dredge, and UNK=Unknown. Gulf of Mexico includes: TX, LA, MS, AL, and the west coast of FL. S. Atlantic includes: east coast of FL. GA, SC, and NC dealers reporting to Southeast Fisheries Science Center. Mid-Atlantic includes: NC dealers reporting to Northeast Fisheries Science Center, VA, MD, DE, NJ, NY, and CT. N. Atlantic includes: RI, MA, NH, and ME. For bluefin tuna, all NC landings are included in the Mid-Atlantic.

U.S. Gulf of Mexico									
Species	**Gear**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**
Bigeye tuna	HND	$1.82	$1.44	$1.25	$3.45	$1.40	$3.45	$2.00	-
	PLL	$2.64	$5.09	$3.41	$4.58	$5.19	$4.58	$3.20	$4.05

	BLL	$0.50	$4.24	$3.53	$5.67	$6.00	$5.67	$4.21	-
Bluefin tuna	HND	$1.25	$2.69	-	-	-	-	$1.73	-
	PLL	-	$6.40	$6.32	$4.64	$4.67	$4.39	$5.87	$4.83
	BLL	-	$4.50	-	-	-	-	$3.00	-
Yellowfin tuna	HND	$2.55	$2.83	$2.34	$2.56	$2.27	$2.56	$2.67	$3.84
	PLL	$3.25	$3.68	$3.64	$4.01	$4.00	$4.01	$3.93	$4.40
	BLL	$3.31	$3.23	$3.73	$4.01	$3.84	$4.01	$3.34	$4.30
Other tunas	HND	$0.79	$0.91	$0.87	$1.04	$1.06	$1.04	$1.21	$1.28
	PLL	$0.70	$0.79	$0.66	$0.58	$0.65	$0.58	$0.53	$0.56
	BLL	$0.74	$0.75	$0.55	$0.65	$0.85	$0.65	$0.63	$0.58
	NET	$0.33	$0.83	$0.29	$0.41	$0.41	$0.41	$0.53	$0.54
	TWL	$0.78	$0.40	$0.30	-	$0.24	-	-	-
	SEN	$0.61	$0.19	-	$0.21	$0.20	$0.21	$0.23	$0.21
	TRP	-	$0.30	$0.30	-	$1.00	-	-	-
Swordfish	HND	$2.84	$3.19	$3.68	$3.38	$3.98	$3.38	$4.08	$3.71
	PLL	$3.41	$2.94	$2.91	$3.32	$3.15	$3.32	$3.04	$3.13
	BLL	$3.25	$2.88	$2.67	$2.89	$2.37	$2.89	$2.52	$2.86
Large coastal sharks	HND	$0.51	$0.44	$0.45	$0.45	$0.58	$0.45	$0.72	$0.53
	PLL	$0.45	$0.36	$0.38	$0.53	$0.54	$0.53	$0.44	$1.52
	BLL	$0.44	$0.36	$0.38	$0.34	$0.44	$0.34	$0.43	$0.49
	NET	$0.50	$0.39	$0.43	$0.39	$0.45	$0.39	$0.56	$0.87
	TWL	$0.25	$0.25	$0.25	$0.25	$0.26	$0.25	-	-
Pelagic sharks	HND	$1.48	$0.93	$1.04	$1.21	$1.25	$1.21	$1.39	$1.40
	PLL	$1.32	$1.06	$1.11	$1.08	$1.07	$1.08	$1.12	$1.16
	BLL	$1.42	$1.19	$1.15	$1.03	$1.14	$1.03	$1.16	$1.32
Small coastal sharks	HND	$0.37	$0.38	$0.32	$0.59	$0.51	$0.59	$0.56	$0.77
	PLL	$0.74	$0.32	$0.33	$0.37	$0.47	$0.37	$0.69	$0.54
	BLL	$0.61	$0.53	$0.50	$0.45	$0.51	$0.45	$0.54	$0.43
	NET	$0.45	$0.46	$0.36	$0.50	$0.72	$0.50	$0.49	$0.55
	TRP	$0.74	-	-	-	-	-	-	-
Shark fins	HND	$15.90	$21.28	$13.97	$12.49	$16.62	$12.49	$12.09	$13.49
	PLL	$21.08	-	$15.21	$17.81	$14.31	$17.81	$14.58	$12.68
	BLL	$21.50	$22.72	$20.17	$21.95	$22.16	$21.95	$18.43	$21.50
	NET	$11.02	-	$6.05	$5.86	$6.91	$5.86	$10.42	$11.72
South Atlantic Coastal U.S.									
Species	**Gear**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**
Bigeye tuna	HND	$2.14	$2.29	$1.89	$2.97	$2.80	$2.97	$3.13	$3.26
	PLL	$2.78	$2.33	$2.26	$2.85	$3.41	$2.85	$3.42	$3.70
	BLL	$2.63	$2.74	$2.66	-	$3.04	-	$3.12	$4.62
Bluefin tuna	HND	$3.52	$3.35	-	$5.94	-	$11.35	$6.19	$8.50
	PLL	$4.82	$4.95	$4.11	$4.91	$4.60	$6.06	$7.07	$5.96
	BLL	$3.61	$5.15	-	-	-	-	-	-
Yellowfin tuna	HND	$1.41	$1.54	$1.54	$1.24	$1.52	$1.24	$1.80	$1.77
	PLL	$2.14	$1.89	$2.09	$2.00	$2.83	$2.00	$2.57	$3.45
	BLL	$2.45	$2.29	$2.60	$0.90	$1.19	$0.90	$1.42	$2.62
	NET	$1.21	$1.12	-	-	$0.87	-	-	-
	TWL	-	$0.44	-	-	-	-	-	-

Other tunas	HND	$0.61	$0.47	$0.58	$0.52	$0.53	$0.52	$0.59	$0.63
	PLL	$1.33	$1.09	$1.26	$1.28	$1.53	$1.28	$1.25	$1.42
	BLL	$1.86	$1.67	$1.13	$0.48	$0.67	$0.48	$0.30	$0.75
	NET	$0.23	$0.21	$0.21	$0.20	$0.31	$0.20	$0.37	$0.40
	TWL	$0.47	$0.26	-	$0.20	-	$0.20	$0.39	$0.39
	TRP	$0.18	-	-	-	-	-	-	-
Swordfish	HND	$4.24	$3.93	$3.91	$4.44	$4.72	$4.44	$4.47	$4.36
	PLL	$3.27	$2.84	$2.98	$3.18	$3.32	$3.18	$3.53	$3.25
	BLL	$3.14	$2.76	$3.19	-	$2.36	-	$3.61	$2.43
	NET	-	$2.50	-	-	-	-	-	-
Large coastal sharks	HND	$0.96	$1.01	$0.49	$0.43	$0.48	$0.43	$0.45	$0.61
	PLL	$1.69	$2.63	$0.35	$0.54	$0.55	$0.54	$0.62	$0.59
	BLL	$0.89	$1.10	$0.39	$0.44	$0.51	$0.44	$0.44	$0.59
	NET	$1.49	$1.59	$0.30	$0.35	$0.45	$0.35	$0.32	$0.39
	TWL	$0.51	$0.81	$0.41	$0.71	$0.43	$0.71	$0.64	$0.43
	TRP	-	$0.23	-	-	$0.30	-	-	-
Pelagic sharks	HND	$0.71	$0.68	$0.84	$0.97	$0.87	$0.97	$0.77	$0.85
	PLL	$0.95	$0.93	$0.93	$0.84	$0.96	$0.84	$1.18	$1.15
	BLL	$0.78	$0.75	$0.87	$0.81	$0.77	$0.81	$2.08	$0.73
	NET	$0.36	$0.34	$0.34	$0.29	$0.37	$0.29	$0.45	$0.42
	TWL	$0.26	$0.26	-	-	$0.22	-	$0.40	$0.51
Small coastal sharks	HND	$0.46	$0.53	$0.49	$0.44	$0.60	$0.44	$0.59	$0.66
	PLL	$0.63	$0.41	$0.24	-	$0.19	-	$0.69	$0.69
	BLL	$0.53	$0.54	$3.19	$0.61	$0.60	$0.61	$0.57	$0.69
	NET	$0.54	$0.54	$0.53	$0.65	$0.64	$0.65	$0.66	$0.63
	TWL	$0.23	-	-	-	$0.20	-	-	-
Shark fins	HND	$19.75	$15.53	$17.17	$20.31	$18.71	$20.31	$17.30	$19.58
	PLL	$11.44	$6.81	$12.72	$9.91	$13.52	$9.91	$7.00	$13.22
	BLL	$22.21	$22.26	$17.83	$19.48	$22.85	$19.48	$21.86	$17.70
	NET	$10.60	$10.41	$12.85	$8.76	$8.89	$8.76	$7.40	$6.35
	TWL	$12.17	$14.00	$10.77	$5.90	$10.85	$5.90	$10.38	$8.80
Mid-Atlantic Coastal U.S.									
Species	**Gear**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**
Bigeye tuna	HND	$4.32	$3.97	$3.79	$4.93	$4.57	$4.33	$4.92	$4.83
	PLL	$3.81	$4.12	$3.92	$4.48	$4.76	$4.49	-	$5.42
	BLL	$4.37	$2.84	$3.91	$4.34	$4.61	$5.02	$6.08	$5.90
	NET	$4.50	-	-	-	-	$3.99	$6.95	$5.27
	TWL	-	-	-	-	-	-	$5.33	$4.91
	DRG	-	$1.50	-	-	-	-	$5.78	-
	UNK	-	$5.00	-	$5.36	$4.95	$5.40		$5.04
Bluefin tuna	HND	$4.93	$4.06	$7.54	$10.25	$11.07	$10.40	$11.26	$14.65
	PLL	$6.83	$5.72	$6.25	$6.03	$5.41	$7.53	$7.09	$7.44
	NET	$2.23	-	-	-	-	-	-	-
	BLL	$7.00	$7.00	-	-	-	-	-	-

Yellowfin tuna	HND	$2.11	$2.00	$1.93	$1.76	$1.99	$2.33	$2.73	$2.72
	PLL	$2.30	$2.14	$2.00	$1.91	$2.20	$2.19	-	$2.64
	BLL	$2.11	$1.81	$1.89	$2.20	$2.40	$2.76	$2.88	$3.75
	NET	$1.49	$1.81	$1.50	$2.08	$2.23	$1.81	$2.34	$3.10
	TWL	$1.53	-	$1.48	-	$3.33	$1.95	$2.18	$3.28
	TRP	-	$1.97	$1.57	$1.59	-	-	-	$4.13
	DRG	-	$1.94	-	-	-	$4.22	$3.22	-
	UNK	-	$2.75	-	$2.62	$3.70	$2.57	$2.99	$3.48
Other tunas	HND	$0.89	$0.69	$0.66	$0.65	$0.74	$0.74	$0.75	$0.44
	PLL	$0.88	$0.86	$0.93	$1.09	$0.86	$0.92	$1.68	$1.06
	BLL	$0.78	$0.83	$1.08	$0.97	$0.91	$1.17	$1.21	$1.20
	NET	$0.49	$0.75	$0.48	$0.35	$0.66	$0.58	$0.59	$0.45
	TWL	$0.47	$0.42	$0.62	$0.52	$1.11	$0.62	$0.51	$0.75
	TRP	-	$0.57	$0.47	$0.58	$0.60	$0.67	$0.55	$0.58
	DRG	-	$1.00	-	-	-	$1.50	$1.25	-
	UNK	-	$1.03	$1.69	$0.65	$1.13	$0.74	$0.77	$0.91
Swordfish	HND	$3.70	-	-	-	$3.29	$3.52	$4.00	$3.34
	PLL	$3.47	$3.18	$2.97	$2.86	$3.60	$3.47	$5.25	$4.12
	BLL	$3.45	$4.00	-	$3.43	$3.80	$3.70	$4.33	$3.41
	NET	$4.19	$3.51	-	-	$3.26	$3.59	$3.83	$2.83
	UNK	-	-	-	-	$4.37	$3.49	$3.17	$4.00
	TWL	$2.86	$3.34	$3.21	$3.55	$3.31	$3.60	$3.89	$3.13
Large coastal sharks	HND	$0.88	$2.09	$2.19	$1.06	$1.60	$0.96	$0.60	$0.64
	PLL	$2.62	$2.78	$2.32	$3.37	$2.33	$2.19	-	-
	BLL	$0.55	$1.11	$2.08	$2.32	$3.03	$4.01	$0.71	$0.55
	NET	$0.89	$1.02	$1.02	$1.52	$0.84	$1.37	$0.67	$0.66
	TWL	$0.55	$0.52	$0.50	$0.80	$1.67	$0.87	$0.56	-
	TRP	-	$2.50	-	-	-	-	-	-
	SEN	-	$1.26	-	-	-	-	$1.08	-
	UNK	-	$0.50	-	$0.68	$2.69	$0.85	$0.63	$0.75
Pelagic sharks	HND	$1.26	$1.41	$1.57	$1.26	$1.33	$1.38	$1.69	$1.40
	PLL	$1.56	$1.31	$1.32	$1.22	$1.40	$1.45	$1.57	$1.47
	BLL	$0.97	$1.12	$1.17	$1.41	$1.50	$1.82	$1.51	$1.46
	NET	$1.02	$0.97	$1.08	$1.32	$1.42	$1.03	$1.12	$0.94
	TWL	$0.69	$1.03	$0.88	$0.55	$1.08	$0.78	$0.94	$0.74
	TRP	$0.40	-	$1.43	-	-	-	-	-
	DRG	$0.49	$2.00	-	-	-	-	-	-
	UNK	-	-	$0.57	$1.78	$1.22	$1.30	$1.52	$1.10
Small coastal sharks	HND	$0.51	$0.45	$0.36	$0.50	$0.44	$0.44	-	$0.56
	PLL	$0.44	$0.50	$0.39	-	$0.46	$0.44	-	$0.53
	BLL	$0.95	-	-	-	-	$0.50	-	-
	NET	-	$0.42	$0.39	$0.44	$0.39	$0.47	$0.75	$0.49
	TWL	-	$1.26	-	-	-	-	-	-
	UNK	-	-	-	-	-	-	-	$0.42
Shark fins	HND								$4.00
	PLL								$4.30
	BLL								$4.54

	NET								$3.61
	TWL								$3.49
North Atlantic Coastal U.S.									
Species	**Gear**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**
Bigeye tuna	HND	$6.00	-	-	$4.89	-	$5.95	$4.51	$5.93
	PLL	$3.42	$4.08	$3.50	$3.79	$4.79	$5.06	-	-
	BLL	-	-	-	$4.30	$3.87	$3.97	$4.46	$5.43
	NET	-	-	-	-	-	-	-	-
	TWL	$3.54	$3.76	-	-	$5.26	-	$7.54	$7.54
Bluefin tuna	HND	$8.21	$7.94	$6.33	$7.79	$8.03	$8.20	$8.63	$8.59
	PLL	$5.24	$5.96	$4.21	$5.38	$4.61	$5.24	$5.00	4.98
	NET	$4.26	-	-	-	-	-	-	-
	SEN	$7.43	$6.61	$4.92	$5.92	$3.33	$5.24	$8.92	$2.00
	TWL	$3.80	-	-	-	-	-	-	-
Yellowfin tuna	HND	$2.87	$3.25	$1.90	$2.90	$3.35	$2.57	$3.69	$3.66
	PLL	$3.01	$2.76	$2.57	$2.89	$3.83	$2.93	$4.40	-
	BLL	$3.77	-	-	$2.51	$3.18	$2.69	$2.95	$4.97
	NET	-	$4.75	-	-	-	-	$2.50	$2.38
	TWL	$2.10	$2.19	$1.65	$3.25	$4.31	$2.87	$2.54	$2.55
	TRP	-	$4.50	$3.10	-	$1.49	-	$2.29	$2.32
Other tunas	HND	$2.39	$2.03	$1.56	$1.78	$1.29	$1.00	$1.32	$2.11
	PLL	$0.70	$1.15	$1.00	$1.17	$1.25	$1.43	$1.11	-
	BLL	$3.00	-	-	$0.66	$0.91	$1.24	$1.48	$2.12
	NET	$0.36	$0.70	$1.14	$0.44	$0.52	$0.71	$0.54	$0.26
	TWL	$0.80	$0.69	$0.37	$0.89	$0.75	$0.32	$1.03	-
	TRP	-	$0.34	$0.44	-	$0.75	$0.94	$0.41	$0.42
	DRG	-	$3.00	-	-	-	-	-	-
Swordfish	HND	$5.69	$5.32	-	$4.79	-	$4.39	$5.37	$4.10
	PLL	$3.58	$3.30	$3.36	$3.85	$4.20	$4.18	$4.07	-
	BLL	-	-	-	$3.75	$3.73	$3.87	$4.36	$4.35
	NET	-	$4.25	-	-	-	-	-	-
	TWL	$4.75	$3.05	$3.18	$4.89	$3.64	$2.75	$2.39	$3.46
	TRP	-	$3.74	-	-	-	-	-	$3.54
Large coastal sharks	HND	$0.50	$0.45	$0.74	-	$0.20	-	-	-
	PLL	$1.21	$0.29	$0.28	$1.03	$0.28	-	-	-
	BLL	$1.43	$1.00	-	-	-	-	-	-
	NET	$0.99	$0.89	$0.89	$0.68	$0.81	-	$0.47	-
	TWL	$0.93	$0.86	$0.66	$0.56	$0.66	-	$1.08	-
	UNK	-	-	-	-	$0.95	$1.27	$0.98	-
	TRP	-	$0.28	$0.22	-	-	-	-	-
Pelagic sharks	HND	$1.38	$1.71	-	-	$5.77	$1.50	$0.76	-
	PLL	$1.37	$1.31	$1.30	$1.34	$1.48	$1.48	$0.87	-
	BLL	-	$0.65	-	$1.07	$1.46	$1.57	$1.28	$1.27
	NET	$0.98	$0.60	$1.30	$1.99	$0.78	$1.23	$0.60	$0.74
	TWL	$1.19	$0.81	$0.63	$0.78	$0.78	$0.75	$0.55	$0.74
	UNK	-	-	-	-	$1.24	$1.47	$1.00	-

	TRP	-	$0.69	$0.68	-	-	-	-	-
Small coastal sharks	HND	-	-	-	-	-	-	-	-
	NET	$1.51	-	-	-	-	-	-	-
	TWL	-	$0.58	-	-	$0.50	-	-	-
Shark fins	UNK	-	-	-	-	-	-	-	$3.00

Table 5.3 Average Ex-vessel Prices per lb for Atlantic HMS by Area.

Species	Area	2001	2002	2003	2004	2005	2006	2007	2008
Bigeye tuna	Gulf of Mexico	$1.94	$4.33	$3.29	$4.54	$4.81	$4.58	$3.19	$4.05
	S. Atlantic	$2.57	$2.45	$2.24	$2.86	$3.32	$3.20	$3.36	$3.66
	Mid-Atlantic	$4.26	$3.82	$3.77	$4.56	$4.72	$4.73	$5.76	$5.70
	N. Atlantic	$4.32	$4.03	$3.45	$4.42	$4.65	$4.88	$4.87	$5.60
Bluefin tuna	Gulf of Mexico	$1.25	$5.56	$6.32	$4.64	$4.67	$4.39	$5.87	$4.83
	S. Atlantic	$4.00	$3.77	$4.11	$4.91	$4.60	$6.36	$7.07	$6.00
	Mid-Atlantic	$5.25	$4.70	$7.38	$9.62	$10.30	$9.81	$10.05	$12.56
	N. Atlantic	$5.79	$7.31	$5.71	$7.42	$5.57	$7.92	$8.31	$8.33
Yellowfin tuna	Gulf of Mexico	$2.98	$3.23	$3.31	$3.75	$3.60	$3.71	$3.65	$4.33
	S. Atlantic	$1.70	$1.73	$1.76	$1.53	$$2.10	$1.85	$2.22	$3.01
	Mid-Atlantic	$1.91	$2.02	$1.91	$1.98	$2.42	$2.53	$2.78	$3.30
	N. Atlantic	$2.93	$2.90	$2.38	$2.65	$3.15	$2.54	$3.38	$3.82
Other tunas	Gulf of Mexico	$0.76	$0.84	$0.75	$0.89	$0.92	$0.91	$0.97	$1.04
	S. Atlantic	$0.58	$0.49	$0.59	$0.49	$0.59	$0.53	$0.59	$0.70
	Mid-Atlantic	$0.70	$0.73	$0.70	$0.63	$0.81	$0.82	$0.80	$0.55
	N. Atlantic	$1.46	$1.17	$0.95	$0.94	$0.85	$0.84	$0.88	$0.87
Swordfish	Gulf of Mexico	$3.31	$2.91	$2.95	$3.31	$3.18	$3.06	$3.23	$3.24
	S. Atlantic	$3.43	$3.14	$3.26	$3.52	$3.73	$3.77	$3.96	$3.75
	Mid-Atlantic	$3.53	$3.25	$2.97	$3.37	$3.70	$3.62	$4.09	$3.47
	N. Atlantic	$4.67	$3.47	$3.33	$4.06	$3.78	$3.87	$4.22	$4.20
Large coastal sharks	Gulf of Mexico	$0.44	$0.36	$0.38	$0.37	$0.46	$0.43	$0.51	$0.60
	S. Atlantic	$1.12	$1.27	$0.39	$0.44	$0.50	$0.40	$0.45	$0.51
	Mid-Atlantic	$1.09	$1.56	$1.62	$1.93	$1.75	$1.71	$0.64	$0.66
	N. Atlantic	$1.02	$0.77	$0.72	$0.70	$0.74	$1.02	$0.70	-
Pelagic sharks	Gulf of Mexico	$1.42	$1.11	$1.13	$1.08	$1.12	$1.21	$1.17	$1.26
	S. Atlantic	$0.68	$0.67	$0.71	$0.65	$0.73	$0.72	$0.86	$0.86
	Mid-Atlantic	$1.09	$1.17	$1.21	$1.29	$1.39	$1.38	$1.39	$1.20
	N. Atlantic	$1.23	$1.00	$1.12	$1.46	$1.40	$1.26	$0.97	$0.93
Small coastal sharks	Gulf of Mexico	$0.58	$0.48	$0.40	$0.45	$0.55	$0.53	$0.51	$0.54
	S. Atlantic	$0.52	$0.53	$0.51	$0.61	$0.62	$0.55	$0.63	$0.65
	Mid-Atlantic	$0.55	$0.48	$0.38	$0.44	$0.42	$0.45	$0.73	$0.48
	N. Atlantic	$1.51	$0.58	-	-	$0.50	-	-	-
Shark fins	Gulf of Mexico	$20.90	$22.64	$18.12	$17.93	$20.24	$20.76	$15.12	$18.11
	S. Atlantic	$18.43	$17.10	$15.85	$14.57	$16.12	$16.30	$12.55	$11.23
	Mid-Atlantic	-	-	-	-	-	-	-	$3.74
	N. Atlantic	-	-	-	-	-	-	-	$3.00

5.1.2 Revenues

Table 5.4 summarizes the average annual revenues of the Atlantic HMS fisheries based on average ex-vessel prices and the weight reported landed as per the U.S. National Report (NMFS, 2009a), the information used in the shark stock assessments, information given to the

International Commission for the Conservation of Atlantic Tunas (ICCAT) (Cortés pers. comm., 2009), as well as price and weight reported to the NMFS Northeast Regional Office by Atlantic bluefin tuna dealers. These values indicate that the estimated total annual revenue of Atlantic HMS fisheries has decreased in 2008 to $36.8 million from $43.8 million in 2007. From 2007 to 2008, the Atlantic tuna fishery's total revenue decreased by $3.5 million. A majority of that decrease can be attributed to the decreased commercial landings of yellowfin tuna. From 2007 to 2008, the annual revenues from shark decreased by 30 percent. This is a continuation of the trend from the previous year, where revenues declined by 50 percent. There were some large regulatory changes in the shark fishery in 2008. The fishery was closed for half of the year and when it opened the trip limit went from 4,000 pounds to a 33 fish limit with no sandbar retention allowed. It is also worth noting that 2007 saw a large decrease in revenues because of large overharvests in 2006, which dramatically reduced the fishing season in 2007. Given these changes, the decreases in large coastal shark revenues in 2007 and 2008 were expected. A similar decline in revenues did not occur in the pelagic or small coastal shark fisheries. Finally, the annual revenues from swordfish from 2007 to 2008 decreased by 13 percent due to both decreased ex-vessel price and landings.

Table 5.4 Estimates of the Total Ex-vessel Annual Revenues of Atlantic HMS Fisheries. Sources: NMFS, 1997; NMFS 2007a; Cortés pers. comm., 2009; and bluefin tuna dealer reports from the Northeast Regional Office.

Species		2001	2002	2003	2004	2005	2006	2007	2008
Bigeye tuna	Ex-vessel $/lb dw	$3.27	$3.66	$3.19	$4.10	$4.38	$4.35	$4.30	$4.70
	Weight lb dw	1,267,393	971,269	512,002	556,270	563,325	960,863	706,361	736,520
	Fishery Revenue	$4,144,375	$3,554,845	$1,633,286	$2,280,707	$2,467,364	$4,179,754	$3,037,352	$3,461,644
Bluefin tuna	Ex-vessel $/lb dw	$8.23	$5.33	$5.91	$7.86	$6.41	$8.51	$8.62	$9.33
	Weight lb dw	1,653,820	2,255,241	1,963,172	1,010,599	816,592	643,750	635,108	725,762
	Fishery Revenue	$13,610,939	$12,020,435	$11,602,347	$7,943,308	$5,234,355	$5,478,313	$5,474,631	$6,771,359
Yellowfin tuna	Ex-vessel $/lb dw	$2.38	$2.48	$2.34	$2.48	$3.06	$2.66	$3.01	$3.42
	Weight lb dw	4,441,168	4,977,156	4,172,204	4,999,908	3,379,951	3,849,095	4,490,199	2,440,605
	Fishery Revenue	$10,569,980	$12,343,347	$9,762,957	$12,399,772	$10,342,650	$10,238,593	$13,515,499	$8,346,869
Other tunas*	Ex-vessel $/lb dw	$0.87	$0.81	$0.75	$0.74	$0.79	$0.78	$0.81	$0.68
	Weight lb dw	392,423	320,288	230,163	307,942	258,911	224,166	270,728	249,387
	Fishery Revenue	$341,408	$259,433	$172,622	$227,877	$204,540	$174,849	$219,290	$169,583
Total tuna	**Fishery Revenue**	**$28,666,702**	**$28,178,059**	**$23,171,213**	**$22,851,664**	**$18,248,908**	**$20,071,509**	**$22,246,772**	**$18,749,456**
Swordfish	Ex-vessel $/lb dw	$3.74	$3.20	$3.13	$3.57	$3.60	$3.58	$3.88	$3.59
	Weight lb dw	4,224,090	4,705,792	4,658,997	4,301,003	3,946,440	3,411,198	4,447,039	4,194,253
	Fishery Revenue	$15,798,097	$15,058,534	$14,582,661	$15,354,581	$14,207,184	$12,212,089	$17,254,511	$15,057,368
Large coastal sharks	Ex-vessel $/lb dw	$0.91	$0.99	$0.78	$0.86	$0.86	$0.89	$0.58	$0.61
	Weight lb dw	3,414,967	4,151,594	4,292,403	3,213,896	3,147,196	3,808,662	2,329,272	1,362,904
	Fishery Revenue	$3,107,620	$4,110,078	$3,348,074	$2,763,951	$2,706,589	$3,389,709	$1,350,978	$831,371
Pelagic sharks	Ex-vessel $/lb dw	$1.11	$0.99	$1.04	$1.12	$1.16	$1.14	$1.10	$1.07
	Weight lb dw	345,895	467,682	637,324	679,469	252,815	192,843	262,179	234,546
	Fishery Revenue	$383,943	$463,005	$662,817	$761,005	$293,265	$219,841	$288,397	$250,964
Small coastal sharks	Ex-vessel $/lb dw	$0.79	$0.52	$0.43	$0.50	$0.52	$0.51	$0.63	$0.55
	Weight lb dw	724,332	615,915	534,523	451,651	634,885	763,327	618,191	623,848
	Fishery Revenue	$572,222	$320,276	$229,845	$225,826	$330,140	$389,297	$389,460	$343,116
Shark fins (weight = 5% of all sharks landed)	Ex-vessel $/lb dw	$19.67	$19.87	$17.09	$16.25	$18.18	$18.53	$13.84	$13.76
	Weight lb dw	224,260	261,760	273,213	217,251	201,745	238,242	160,482	111,065
	Fishery Revenue	$4,411,188	$5,201,162	$4,669,202	$3,530,326	$3,667,720	$4,414,617	$2,221,072	$1,528,253
Total sharks	**Fishery Revenue**	**$8,474,974**	**$10,094,521**	**$8,909,938**	**$7,281,107**	**$6,997,715**	**$8,413,464**	**$4,249,907**	**$2,953,705**
Total HMS	Fishery Revenue	$52,939,772	$53,331,115	$46,663,811	$45,487,352	$39,453,807	$40,697,061	$43,751,191	$36,760,529

Note: Average ex-vessel prices may have some weighting errors, except for bluefin tuna which is based on a fleet-wide average. Other tunas include skipjack and albacore.

5.1.3 Operating Costs

NMFS has collected operating cost information from commercial permit holders via logbook reporting. Each year, 20 percent of active Atlantic HMS commercial permit holders are selected to report economic information along with their Atlantic HMS logbook or Coast Fisheries logbook submissions. In addition, NMFS also receives voluntary submissions of the trip expense and payment section of the logbook form from non-selected vessels.

The primary expenses associated with operating an Atlantic HMS permitted commercial vessel include labor, fuel, bait, ice, groceries, other gear, and light sticks on swordfish trips. Unit costs are collected on some of the primary variable inputs associated with trips. The unit costs for fuel, bait, and light sticks are reported in Table 5.5. Fuel costs have increased over 282 percent from 2004 to 2008 while the cost per pound for bait has remained fairly constant. The unit cost per light sticks has actually declined over this same period.

Table 5.5 Median Unit Costs for Fuel, Bait, and Light Sticks 2004 - 2008. Source: Atlantic HMS logbooks.

Input Unit Costs	2004	2005	2006	2007	2008
Fuel	$1.27	$1.90	$2.20	$2.29	$3.59
Bait	$0.80	$0.85	$0.85	$0.85	$0.85
Light Sticks*	$0.52	$0.50	$0.50	$0.40	$0.37

*Cost per light stick.

Table 5.6 provides the median total cost per trip for the major variable inputs associated with Atlantic HMS trips. Fuel costs are one of the largest variable expenses and the total costs of fuel increased substantially per trip in 2008.

Table 5.6 Median Input Costs for HMS Trips 2004 - 2008. Source: Atlantic HMS logbooks.

Input Costs	2004	2005	2006	2007	2008
Fuel	$1,871	$2,341	$1,728	$2,144	$3,031
Bait	$960	$920	$750	$858	$1,080
Light Sticks	$650	$500	$500	$520	$444
Ice Costs	$465	$480	$400	$540	$520
Grocery Expenses	$675	$610	$470	$600	$600
Other Trip Costs	$800	$1,250	$920	$1,236	$1,293

Labor costs are also an important component of operating costs for HMS commercial vessels. Table 5.7 lists the amount of crew on a typical trip. The median number of crew members has been consistently three from 2004 to 2008. Most crew and captains are paid based on a lay system. According to Atlantic HMS logbook reports, owners are typically paid 50 percent of revenues. Captains receive a 20 percent share and crew in 2007 and 2008 received 15 percent on average. These shares are typically paid out after costs are netted from gross revenues. Median total shared costs per trip have ranged from $4,493 to $5,000 from 2004 to

2008. In 2008, median reported total trip sales were $10,970. In 2007, the median reported total trip sales were $12,064.

Table 5.7 Median Labor Inputs and Costs for HMS Trips 2004 - 2008. Source: Atlantic HMS logbooks.

Labor	2004	2005	2006	2007	2008
Number of Crew	3	3	3	3	3
Owner Share	50%	50%	50%	50%	50%
Captain Share	20%	20%	20%	20%	20%
Crew Share	13%	11%	12%	15%	15%
Total Shared Costs	$4,493	$4,550	$4,500	$4,500	$5,000

It should be noted that operating costs for the Atlantic HMS commercial fleet vary considerably from vessel to vessel. The factors that impact operating costs include unit input costs, vessel size, target species, and geographic location among other things.

5.2 Fish Processing and Wholesale Sectors

Consumers spent an estimated $69.8 billion for fishery products in 2008, including $46.8 billion at food service establishments, $22.7 billion in retail sales for home consumption, and $389.4 million for industrial fish products. The commercial marine fishing industry contributed $35.0 billion (in value added) to the U.S. Gross National Product in 2008. For comparison, in 1996 consumers spent an estimated $41.2 billion, including $27.8 billion at food service establishments, $13.2 billion for home consumption, and $283.9 billion for industrial fish products. The commercial marine fishing industry contributed $21.0 billion to the U.S. Gross National Product in 1996.

5.2.1 Dealers

NMFS does not currently have information regarding the costs and revenues for Atlantic HMS dealers. In general, dealer costs include: purchasing fish; paying employees to process the fish; rent or mortgage on the appropriate building; and supplies to process the fish. Some dealers may provide loans to the vessel owner, money for vessel repairs, fuel, ice, bait, etc. In general, outlays and revenues of dealers are not as variable or unpredictable as those of a vessel owner; however, dealer costs may fluctuate depending upon supply of fish, labor costs, and equipment repair.

Although NMFS does not have specifics regarding HMS dealers, there is some information on the number of employees for processors and wholesalers in the United States provided in *Fisheries of the United States* (NMFS, 2009b) (http://www.st.nmfs.noaa.gov/st1/publications.html). Table 5.8 provides a summary of available information.

Table 5.8 Processors and Wholesalers: Plants, and Employment, 2007

Area and State	Processing (1)		Wholesale (2)		Total	
	Plants	Employment	Plants	Employment	Plants	Employment
	----------Number----------					
New England:						
Maine	33	714	173	866	206	1,580
New Hampshire	9	287	17	132	26	419
Massachusetts	56	2,543	174	2,184	230	4,727
Rhode Island	10	265	36	(3)	46	(3)
Connecticut	4	68	16	163	20	231
Total	**112**	**3,877**	**416**	**3,345**	**528**	**6,957**
Mid-Atlantic:						
New York	21	464	262	1,927	283	2,391
New Jersey	17	538	87	1,023	104	1,561
Pennsylvania	8	104	32	547	40	651
Delaware	1	(3)	5	25	6	25
District of Columbia	-	-	5	(3)	5	0
Maryland	21	804	47	506	68	1,310
Virginia	49	1,824	60	578	109	2,402
Total	**117**	**3,734**	**498**	**4,606**	**615**	**8,340**
South Atlantic:						
North Carolina	29	639	68	651	97	1,290
South Carolina	2	(3)	18	132	20	132
Georgia	5	657	30	455	35	1,112
Florida	30	1,608	287	2,848	317	4,456
Total	**66**	**2,904**	**403**	**4,086**	**469**	**6,990**
Gulf:						
Alabama	36	1,695	18	214	54	1,909
Mississippi	26	3,072	26	90	52	3,162
Louisiana	72	1,925	105	547	177	2,472
Texas	31	1,598	83	900	114	2,498
Total	**165**	**8,290**	**232**	**1,751**	**397**	**10,041**
Inland States or Other						
Areas: (4), Total	**62**	1,774	**262**	**3,289**	**324**	**5,063**

(1) Data are based on North American Industry Classification System (NAICS) 3117 as reported to the Bureau of Labor Statistics.
(2) Data are based on North American Industry Classification System (NAICS) 42446 as reported to the Bureau of Labor Statistics.
(3) Included with Inland States.

5.2.2 Processing Sector

NMFS does not collect wholesale price information from dealers. The Agency did collect annual report information from the Fulton Fish Market, however that data series was discontinued in 2004.

NMFS has information regarding the mark-up percentage paid by consumers. A mark-up or margin is the difference between the price paid for the product by the consumer and the wholesale or dockside value for an equivalent weight of the product. This information is presented in Table 5.9. Primary wholesalers and processors on average received a 90.3 percent margin on sales in 2008.

Table 5.9 Summary of the Mark-Up and Consumer Expenditures for the Primary Wholesale and Processing of Domestic Commercial Marine Fishery Products. Source: NMFS 2009b.

	2008
Purchase of fishery inputs	$7,390,725,000
Percent mark-up of fishery inputs	90.3%
Total mark-up	$6,675,397,000
Value added as percent of total mark-up	60.3%
Value added within sector	$4,024,922,000
Total value of sales within sector	**$14,066,121,000**

5.3 International Trade

5.3.1 Overview of International Trade for Atlantic HMS

Several regional fishery management organizations (RFMOs), including ICCAT, have taken steps to improve the collection of international trade data to further international conservation policy for the management of HMS. While RFMOs cannot re-create information about stock production based on trade data, this information can be used provisionally to estimate landings related to these fisheries, and to identify potential compliance problems with certain RFMO management measures. United States participation in HMS related international trade programs, as well as a review of trade activity, is discussed in this section.

The United States collects general trade monitoring data through the U.S. Bureau of Customs and Border Protection (CBP; imports) and the U.S. Bureau of the Census (Census Bureau; exports and imports). These programs collect data on the amount and value of imports and exports categorized under the Harmonized Tariff Schedule (HTS). Many HMS have distinct HTS codes, and some species are further subdivided by product (*e.g.*, fresh or frozen, fillets, steaks, etc.). NMFS provides Census Bureau trade data for marine fish products online for the public at http://www.st.nmfs.gov/st1/trade/index.html. Some species are combined into groups (*e.g.*, sharks), which can limit the value of these data for fisheries management when species-specific information is required. These data are further limited since the ocean area of origin for each product is not distinguished. For example, the HTS code for Atlantic, Pacific, and even Indian Ocean bigeye tuna is the same.

Trade data for Atlantic HMS are more useful as a conservation tool when they include more detailed information, such as the flag of the harvesting vessel, the ocean of origin, and the species for each transaction. Under the authority of Atlantic Tunas Convention Act (ATCA) and the Magnuson-Stevens Act, NMFS collects this more detailed information while monitoring international trade of bluefin tuna, swordfish, southern bluefin tuna, and frozen bigeye tuna. Under NMFS regulations at 50 CFR 300 subpart M, NMFS requires traders of these species and shark fins to obtain the HMS International Trade Permit (Table 5.10). These trade programs implement ICCAT recommendations and support rebuilding efforts by collecting data necessary to identify nations and individuals that may be fishing in a manner that diminishes the effectiveness of ICCAT fishery conservation and management measures (see Section 5.3.4). Copies of all trade monitoring documents associated with these programs may be found on the

NMFS HMS Management Division webpage at http://www.nmfs.noaa.gov/sfa/hms/. These and several other trade monitoring programs established by NMFS for HMS are described in greater detail below.

Table 5.10 Number of International Trade Permits (ITP) by state as of November 2009.

State	Number of ITPs
CA	69
CT	2
FL	48
GA	1
HI	10
IL	2
KS	1
LA	4
MA	26
MD	3
ME	9
NC	2
NH	2
NJ	10
NY	23
OR	1
PA	1
RI	5
TX	3
VA	3
WA	8
TOTAL	**233**

5.3.1.1 Bluefin Tuna Catch Document

For over a decade, the trade of bluefin tuna was tracked internationally under ICCAT's Bluefin Tuna Statistical Document (BSD) program (Recommendation 92-01). In 2007, ICCAT adopted a more rigorous bluefin tuna catch document (BCD) program (Recommendation 07-10) which tracks bluefin from capture, through farming operations, landing, and trade. NMFS implemented the program in July 2008 (73 CFR 31380, June 2, 2008). Updates to the program were included in ICCAT recommendation 08-12 and implemented operationally by NMFS for the United States on June 17, 2009. The intent of the program is to support the ICCAT Rebuilding Program by accounting for all bluefin tuna harvested and available in the marketplace, or held in cages.

A BCD is required to be generated at the harvest of all bluefin tuna. In the United States, bluefin tuna are tagged when landed, and landing data associated with the tag number is transmitted to NMFS. The tag stays on the fish until it is cut up into portions to be consumed,

and the associated landings data can be retrieved at any time by referencing the tag number. If a bluefin is exported, then a BCD document is generated to accompany the export, and remains with the fish until it is consumed abroad. Exporters must also be permitted under the HMS International Trade Program.

BCDs are required to accompany the import of any bluefin tuna into the United States. Importers are first required to obtain an HMS International Trade Permit from NMFS, and must report any trade of bluefin tuna or other covered species. NMFS routinely consults import data generated by CBP to check against BCD data and ensure that importers are abiding by BCD and other NMFS regulations implementing ICCAT requirements.

5.3.1.2 Swordfish Statistical Document

In 2005, the ICCAT swordfish statistical document (SD) program was implemented by the United States to replace the previously used Certificate of Eligibility. The swordfish SD is used to track trade of Atlantic swordfish and assist in implementing the ICCAT minimum size of 14.9 kg dw. The swordfish SD program is based on a 2001 ICCAT recommendation (01-22), and ensures that all imported swordfish are greater than the minimum size of 14.9 kg (33 lb) dw, and identifies the flag of the harvesting vessel and ocean area of origin. Similar to the BCD program, CBP data on swordfish imports is also used to obtain missing data and identify dealers that are not following the required reporting procedures.

5.3.1.3 Bigeye Tuna Statistical Document

Like the two previous trade monitoring programs discussed above, the bigeye tuna SD program is used to track movement of internationally traded bigeye tuna to its final destination. ICCAT recommended the implementation of a bigeye tuna SD program in 2001 (recommendation 01-21). The initial program was implemented in 2005 along with the swordfish SD, and applies only to frozen bigeye tuna. It may be expanded to cover fresh product in the future. Other RFMOs, including the Inter-American Tropical Tuna Commission and the Indian Ocean Tuna Commission, have also adopted frozen bigeye SD programs.

5.3.1.4 Dolphin-safe Tuna Imports

For every shipment of frozen or processed tuna imported into the United States, a completed Fisheries Certificate of Origin (NOAA Form 370) is required to be submitted to the U.S. Customs and Border Protection at the time of importation. In some cases, an additional certification signed by a representative of a nation participating in the International Dolphin Conservation Program or a Captain's Statement is required to accompany the NOAA Form 370. Since the late 1970s, NOAA Form 370 has been used to document imports of frozen or processed yellowfin tuna and other species of tuna for the purpose of protecting dolphins in the Eastern Tropical Pacific Ocean. Form 370 is filed with other documents necessary for entry of tuna into the United States. The form is *not* required for fresh tuna. Further information is available on the website http://dolphinsafe.gov/.

5.3.1.5 Billfish Certificate of Eligibility

The Billfish Certificate of Eligibility is used to ensure that any billfish being imported or sold in the United States (outside of the Pacific states) is not of Atlantic origin. In the Pacific states, billfish involved in trade are presumed to be of Pacific origin. Any statement that contains the specified information is sufficient to meet the certificate of eligibility documentation requirements, and it needs to be available upon request throughout the entire commerce stream, including at time of consumption at a restaurant. It is not necessary to use the form available from NMFS or to submit the form to NMFS upon final disposition of the billfish.

5.3.1.6 Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)

CITES is an international agreement that regulates the global trade in wildlife. The goal of CITES is to protect and regulate species of animals and plants to ensure that commercial demand does not threaten their survival in the wild. Countries cooperate through a system of permits and certificates to confirm that trade is legal. Species listed on Appendix II are those that are vulnerable to overexploitation, but not at risk of extinction. In every case of an import or export of an Appendix II species, an export/import permit may only be issued if, the export/import will not be detrimental to the survival of the species, the specimen was legally acquired (in accordance with the national wildlife protection laws) and any live specimen will be shipped in a manner which will not cause it any damage. Currently there are three species of sharks listed on Appendix II, whale, basking and great white sharks. In addition, the United States has submitted two proposals, co-sponsored by Palau, for consideration at the fifteenth meeting of the Conference of the Parties to CITES (CoP15) to list the following six shark species in Appendix II: oceanic whitetip shark (*Carcharhinus longimanus*); scalloped hammerhead (*Sphyrna lewini*); great hammerhead (*S. mokarran*); smooth hammerhead (*S. zygaena*); dusky shark (*C. plumbeus*); and sandbar shark (*C. obscurus*). The United States submitted these proposals due to concerns that over-exploitation to supply the international fin trade is negatively impacting the population status of these sharks, as the fins of these six shark species are among the most valuable in trade. In October 2009, the Principality of Monaco proposed inclusion of Atlantic bluefin tuna on Appendix I of the Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES). Such listing would prohibit international commercial trade of the species.

5.3.2 U.S. Exports of HMS

Exports" may include merchandise of both domestic and foreign origin. The Census Bureau defines exports of "domestic" merchandise to include commodities which are grown, produced, or manufactured in the United States (*e.g.*, fish caught by U.S. fishermen). For statistical purposes, domestic exports also include commodities of foreign origin which have been altered in the United States from the form in which they were imported, or which have been enhanced in value by further manufacture in the United States. The value of an export is the f.a.s. (free alongside ship) value defined as the value at the port of export based on a transaction price including inland freight, insurance, and other charges incurred in placing the merchandise

alongside the carrier. It excludes the cost of loading the merchandise, freight, insurance, and other charges or transportation costs beyond the port of exportation.

5.3.2.1 Atlantic and Pacific Bluefin Tuna Exports

As discussed in the previous section, NMFS collects detailed export data on bluefin tuna (Atlantic and Pacific) through the BCD program. Table 5.2 gives bluefin tuna export data for exports from the United States. Recent decreases in Atlantic bluefin tuna exports since 1999 could in part be a result of the growing U.S. market for high-quality fresh bluefin tuna meat. Since 2004, exports could also have been reduced because of a reduction in U.S. Atlantic bluefin tuna landings.

Table 5.11 includes data from the NMFS BCD program, and Census Bureau data. Census Bureau data are consistently greater in value than data reported by the BCD program. This has been determined to be a result of NMFS' additional quality control measures that ensure data for other species (*e.g.*, Southern bluefin tuna) or other transaction types (*e.g.*, re-exports) are not erroneously included with bluefin export data. Bluefin tuna re-export data are listed separately in Table 5.19.

Table 5.11 United States Exports of Atlantic and Pacific Bluefin Tuna (BFT), 1999-2008. Sources: NMFS BCD Program, NERO, and Census Bureau.

Year	Atlantic Commercial Landings (NERO, MT, DW)	Atlantic BFT Exports (BSD, MT, DW)	Pacific BFT Exports (BSD, MT, DW)	Total U.S. Exports (BSD, MT, DW)	Total U.S. Exports (Census Bureau, MT)	Value of U.S. Exports (Census Bureau, $ million)
1999	876.0	735.6	95.7	831.3	1,183	9.37
2000	903.9	758.0	76.0	834.0	1,044	11.20
2001	987.0	812.3	67.0	879.0	1,020	10.70
2002	964.0	730.4	0.1	730.5	922	10.74
2003	756.9	578.7	2.1	580.8	998	11.36
2004	428.6	247.3	0.0	247.3	370	4.50
2005	419.4	245.7	125.1	370.8	454	5.30
2006	204.6	93.1	0.0	93.1	281	3.60
2007	196.4	85.4	8.2	93.6	238	2.90
2008	266.4	146.5	0.0	146.5	177	2.49

Note: most exports of Pacific bluefin tuna were in round (whole) form, although some exports were of dressed and gilled/gutted fish; Atlantic exports were almost entirely dressed, but also included whole and other product forms (dw); data are preliminary and subject to change.

5.3.2.2 Other Tuna Exports

Export data for other tunas is gathered by the Census Bureau, and includes trade data for albacore, yellowfin, bigeye, and skipjack tuna from all ocean areas of origin combined. In 2001, albacore tuna first replaced bluefin tuna as the most valuable tuna export from the United States (Table 5.12), according to Census Bureau information. Albacore has remained a higher value

export than bluefin tuna since 2003. Comparing the last five years, the amount and value of exported albacore was greatest for the year 2004, and second greatest in 2007. During the time period covered by this table, the annual amount and value of frozen exports exceeded fresh exports for every year. Landings of Atlantic albacore were lower in 2008 than any other year included in Table 5.12.

Table 5.12 Amount and Value of U.S. Exports of Albacore Tuna From All Ocean Areas, 1999-2008 (Census Bureau data) and U.S. Landings of North Atlantic Albacore Tuna (2009 U.S. National Report to ICCAT).

Year	Atlantic Landings (mt ww)	**U.S. Exports** (from all ocean areas)					
		Fresh		Frozen		Total for all Exports	
		MT	US$ (million)	MT	US$ (million)	MT	US$ (million)
1999	317	517	1.01	2,743	5.52	3,260	6.54
2000	407	263	0.78	2,747	6.04	3,010	6.83
2001	324	1,542	3.62	4,609	9.83	6,151	13.45
2002	488	680	1.50	4,483	8.28	5,163	9.78
2003	448	894	1.86	9,731	18.85	10,624	20.71
2004	640	1,360	3.28	10,737	24.11	12,097	27.38
2005	486	549	1.61	7,402	16.99	7,951	18.60
2006	400	378	1.04	8,810	19.56	9,187	20.60
2007	532	275	0.84	11,731	25.52	12,006	26.35
2008	248	997	2.69	7,957	22.54	8,954	25.23

Note: Landings may be calculated on a calendar or fishing year basis; exports may be in whole (ww) or product weight (dw); data are preliminary and subject to change.

Table 5.13 and Table 5.14show U.S. Atlantic landings and U.S. exports from all ocean areas combined for yellowfin and skipjack tuna, respectively. Yellowfin exports were greater and more valuable than exports for skipjack or bigeye tuna (Table 5.13), Yellowfin tuna exports markedly increased in 2008. The amount of fresh yellowfin product exported usually exceeds the amount of frozen yellowfin product annually. However, export of frozen product was much higher in 2008 than any other year included in Table 5.13. Covered in Table 5.14, the amount and value of exported fresh and frozen skipjack tuna has varied over the nine year period with no discernable trends. Exports and landings of skipjack in 1999 far exceeded values for any of the following years.

Table 5.13 Amount and Value of U.S. Exports of Yellowfin Tuna From All Ocean Areas, 1999-2008 (Census Bureau data) and U.S. Landings of Atlantic Yellowfin Tuna (*2009 U.S. National Report to ICCAT).*

Year	Atlantic Landings (mt ww)	**U.S. Exports** (from all ocean areas)					
		Fresh		Frozen		Total for all Exports	
		MT	US$ (million)	MT	US$ (million)	MT	US$ (million)
1999	7,569	947	2.09	390	.84	1,337	2.93
2000	7,051	412	1.12	406	.76	819	1.89
2001	6,703	290	.71	834	1.45	1,124	2.17
2002	5,646	1612	2.37	420	.81	2,033	3.19
2003	7,685	1792	2.93	176	.68	1,968	3.62
2004	6,437	306	1.54	242	.31	549	1.86
2005	5,562	158	1.70	291	.97	449	2.67
2006	7,090	183	1.96	108	.37	291	2.32
2007	5,559	148	1.75	138	.44	286	2.19
2008	2,407	198	2.09	4,140	9.06	4,338	11.16

Note: Landings may be calculated on a calendar or fishing year basis; exports may be in whole (ww) or product weight (dw); data are preliminary and subject to change.

Table 5.14 Amount and Value of U.S. Exports of Skipjack Tuna From All Ocean Areas, 1999-2008 (Census Bureau data) and U.S. Landings of West Atlantic Skipjack Tuna (*2009 U.S. National Report to ICCAT).*

Year	Atlantic Landings (mt ww)	**U.S. Exports** (from all ocean areas)					
		Fresh		Frozen		Total for all Exports	
		MT	US$ (million)	MT	US$ (million)	MT	US$ (million)
1999	152	88	.20	1092	.89	1,181	1.10
2000	44	7	.01	83	.05	91	.06
2001	69	82	.15	34	.04	117	.20
2002	66	66	.17	11	.01	77	.18
2003	77	81	.22	0	0	81	.22
2004	102	55	.30	140	.18	196	.48
2005	30	35	.14	-	-	35	.14
2006	61	6	.02	23	.04	30	.06
2007	66	17	.06	77	.12	94	.18
2008	67	30	.15	349	.41	380	.56

Note: Landings data may have been ported on either a fishing year or calendar year basis; exports may be in whole (ww) or product weight (dw); data are preliminary and subject to change.

Bigeye tuna exports and Atlantic landings are given in Table 5.15. No data were available for bigeye tuna exports in 2001, and prior to 2001 bigeye exports were included in the category of unspecified tuna. Annually, bigeye tuna exports include more fresh than frozen product, except in 2008 when export of frozen product increased dramatically.

Table 5.15 Amount and Value of U.S. Exports of Bigeye Tuna From All Ocean Areas, 2002-2008 (Census Bureau data) and U.S. Landings of Atlantic Bigeye Tuna (*2009 U.S. National Report to ICCAT)*.

Year	Atlantic Landings (mt ww)	U.S. Exports (from all ocean areas)					
		Fresh		Frozen		Total for all Exports	
		MT	US$ (million)	MT	US$ (million)	MT	US$ (million)
2002	600	95	.22	8	.01	104	.24
2003	480	255	.47	40	.08	295	.56
2004	419	361	1.40	48	.10	410	1.51
2005	484	431	1.95	50	.12	481	2.07
2006	991	223	1.69	76	.20	299	1.89
2007	523	128	1.38	65	.14	193	1.52
2008	489	144	1.72	31.7	.96	462	2.68

NOTE: Landings data may have been reported on either a fishing year or calendar year basis; exports may be in whole (ww) or product weight (dw); data are preliminary and subject to change.

5.3.2.3 Shark Exports

Export data for sharks is gathered by the Census Bureau, and includes trade data for sharks from any ocean area of origin. Shark exports are not categorized down to the species level, with the exception of dogfish, and are not identified by specific product code other than fresh or frozen meat and fins. Due to the popular trade in shark fins and their high relative value compared to shark meat, a specific HTS code was assigned to shark fins in 1998. It should be noted that there is no tracking of other shark products besides meat and fins. Therefore, NMFS cannot track trade in shark leather, oil, or shark cartilage products.

Table 5.16 indicates the magnitude and value of shark exports by the United States from 1999 – 2008. The reduction in shark fin exports from 2002 to 2008 is of particular note, as is the increase in the unit value of shark fins during this time period (except for 2008). Decreases in shark fin trade were expected as the result of the Shark Finning Prohibition Act, which was enacted in December of 2000 and implemented by final rule (67 FR 6194, February 11, 2002). Also of note is the dramatic increase in export of frozen shark products in 2008.

Table 5.16 Amount and Value of U.S. Shark Product Exports From 1999-2008. Source: Census Burea.

Yr	Shark Fins Dried			Non-specified Fresh Shark			Non-specified Frozen Shark			Total for all Exports	
	MT	US$ (million)	$/KG	MT	US$ (million)	$/KG	MT	US$ (million)	$/KG	MT	US$ (million)
1999	106	.91	8.54	270	.48	1.80	155	.46	2.97	532	1.86
2000	365	3.51	9.62	430	.78	1.82	345	.81	2.35	1,140	5.10
2001	335	3.16	9.44	332	.54	1.64	634	2.34	3.69	1,301	6.04
2002	123	3.46	28.00	968	1.47	1.52	982	2.34	2.38	2,075	7.28
2003	45	4.03	87.79	837	1.31	1.57	592	1.34	2.28	1,476	6.70
2004	63	3.02	47.53	536	1.18	2.21	472	.98	2.09	1,071	5.18

Yr	Shark Fins Dried			Non-specified Fresh Shark			Non-specified Frozen Shark			Total for all Exports	
	MT	US$ (million)	$/KG	MT	US$ (million)	$/KG	MT	US$ (million)	$/KG	MT	US$ (million)
2005	31	2.37	76.93	377	1.03	2.73	494	1.06	2.15	902	4.46
2006	34	3.17	94.66	816	1.62	1.99	747	1.38	1.85	1,597	6.17
2007	19	1.78	93.68	502	1.05	2.09	695	1.35	1.94	1,216	4.18
2008	10	0.69	69.00	559	1.21	2.16	4121	7.21	1.74	4,690	3.64

Note: Exports may be in whole (ww) or product weight (dw); data are preliminary and subject to change.

5.3.2.4 Swordfish Exports

Since 1999, U.S. Census data only reports swordfish exports for the years 2007 and 2008 (Table 5.17). The low cost and year round availability of swordfish imports into the United States is believed to have reduced the marketability of U.S. domestic swordfish, and created an export market for U.S. product in recent years.

Table 5.17 Amount and Value of U.S. Swordfish Product Export from 2007-2008.
Source: Census Bureau

Yr	Swordfish Fillet Fresh		Swordfish Fillet Frozen		Swordfish Fresh		Swordfish Frozen		Swordfish Meat Frozen		Total	
	MT	US$ (mill.)	MT	US$ (mill.)	MT	US$ (mill.)	MT	US$ (mill.)	MT	US$ (mill.)	MT	US$ (mill.)
2007	38	.33	11	.08	135	.91	11	.04	216	.69	412	2.1
2008	24	.25	47	.34	121	.89	1.2	.01	154	.88	349	2.4

5.3.2.5 Re-exports of Atlantic HMS

For purposes of international trade tracking of HMS, the term “re-export” refers to a product that has been entered for consumption into the United States and then exported to another country, with or without further processing in the United States (from 50 CFR Part 300, Subpart M, International Trade Documentation and Tracking Programs for HMS). For most HMS species for most years, re-export activity is a small fraction of export activity and well below relative reference points of 1000 mt and/or one million dollars annually. Annual re-export figures in excess of these relative reference points are given in Table 5.9.

In previous editions of this SAFE Report, bluefin tuna re-exports for 2003-2005 reflected a great deal of transshipment from Mexico through the United States to Japan. Implementation of the HMS International Trade Permit regulations in 2005 (69 FR 67268, November 17, 2004) changed the way re-exports and transshipments were distinguished, and probably resulted in the decrease in re-exports since 2005. Table 5.18 has been updated to reflect these changes for previous years.

Table 5.18 Re-exports for HMS (see Table 5.10 for bluefin tuna) over the reference points of 1000 mt and/or one million U.S. dollars, annually from 1999-2008. (Census Bureau data).

Year	Product	Amount (MT)	Value ($ mill.)
2004	Shark fins, dried	29	1.84
2005	Yellowfin tuna, fresh	123	2.30
2005	Shark fins, dried	34	1.53
2006	Yellowfin tuna, fresh	208	2.62
2007	Yellowfin tuna, fresh	208	2.91
2007	Yellowfin tuna, frozen	506	1.80
2008	Yellowfin tuna, fresh	224	3.40
2008	Shark fins, dried	26	1.37

5.3.2.6 Summary of Atlantic HMS Exports

Nationally, the value of HMS exports (from all ocean areas combined) is dominated by tuna products. In 2008 fresh and frozen tuna products accounted for 17,307 mt dw or 1.7 percent of the 1,042,613 mt dw of fresh and frozen seafood products exported from the United States, as indicated in *Fisheries of the United States, 2008* The value of these HMS products accounted for $55.8 million, out of a national total of $3.4 billion.

Data reflecting international trade of HMS species harvested from all ocean areas are of limited value for describing trade of HMS harvested from the Atlantic Ocean. For example, Atlantic landings of albacore tuna (commercial and recreational) for 2003 were reported in the 2004 U.S. National Report to ICCAT as 448 mt (see Table 5.12). National trade data show that over 10,000 mt of albacore were exported, which indicates that the majority of albacore exports were Pacific Ocean product. Trade tracking programs such as the bluefin tuna, swordfish, and bigeye tuna consignment document programs are more accurate for tracking the international disposition of Atlantic HMS.

5.3.3 U.S. Imports of Atlantic HMS

All import shipments must be reported to the U.S. Bureau of Customs and Border Protection. “General” imports are reported when a commodity enters the country, and "consumption" imports consist of entries into the United States for immediate consumption combined with withdrawals from CBP bonded warehouses. “Consumption” import data reflect the actual entry of commodities originating outside the United States into U.S. channels of consumption. As discussed previously, CBP data for certain products are provided to NMFS for use in implementing consignment document programs. U.S. Census Bureau import data are used by NMFS as well.

5.3.3.1 Atlantic and Pacific Bluefin Tuna Imports

United States imports and re-exports of bluefin tuna for 1999 through 2008, as reported through both CBP and BCD program data, are shown in Table 5.19. The difference in import numbers between the CBP and BCD data may be explained by imports of other species (*e.g.*, Southern bluefin tuna) erroneously included under the bluefin tuna HTS code, or, a lack of knowledge and compliance with the BCD program by importers.

The rise in popularity of sashimi in the United States generated increased imports of bluefin tuna, and dealers reported an expanded domestic market for both locally-caught and imported raw tuna during the early part of the current decade. However, imports have decreased consistently each year from 2006-2008.

Table 5.19 Imports of Atlantic and Pacific Bluefin Tuna into the United States: 1999-2008. Sources: NMFS BSD program and CBP data.

YEAR	NMFS BSD Program		U.S. CBP Data	
	Imports (MT)	Re-exports (MT)	Imports (MT)	VALUE (US$ mill.)
1999	416.6	11.9	558.6	3.02
2000	431.5	29.7	453.4	7.67
2001	512.9	7.0	532.3	8.21
2002	529.8	9.9	605.0	9.75
2003	649.9	38.4	780.3	11.67
2004	823.4	17.1	886.1	15.25
2005	966.1	10.4	1,064.0	19.96
2006	791.5	18.5	865.2	17.05
2007	584.6	17.7	697.1	13.97
2008	412.7	16.8	487.1	11.91

Note: Most imports of bluefin tuna were in dressed form, and some were round and gilled/gutted fish, fillets or belly meat (dw); data are preliminary and subject to change. Southern bluefin tuna trade was included in figures for Atlantic and Pacific bluefin tuna trade prior to 2002.

5.3.3.2 Other Tuna Imports

Since January 2001, CBP has been collecting species-specific import information for bigeye tuna (grouped to include all ocean areas). Previously, bigeye tuna had been grouped with other tuna under general tuna imports. The total amount of bigeye tuna imports has ranged between 4800 and 8059 mt over the last eight years, as shown in Table 5.20. Since 1999, imports of frozen bigeye tuna were greatest in 2008.

Table 5.20 Imports of Bigeye Tuna Into the United States From All Ocean Areas Combined: 2001-2008 Source: Census Bureau data.

Year	Fresh		Frozen		Total for all Imports	
	MT	US$ (million)	MT	US$ (million)	MT	US$ (million)
2001	4,684	25.70	135	.32	4,820	26.02
2002	6,312	39.84	319	.70	6,632	40.55
2003	7,312	51.01	560	1.48	7,872	52.49
2004	6,752	49.10	1,175	2.62	7,928	51.73
2005	5,040	38.18	1,539	3.33	6,579	41.51
2006	4,920	36.55	1,523	3.15	6,442	39.70
2007	5,617	42.30	1,512	3.19	7,129	45.49
2008	5,462	41.43	2,597	5.31	8,059	46.74

Note: Imports may be whole weight (ww) or product weight (dw); data are preliminary and subject to change.

Annual yellowfin tuna imports into the United States for all ocean areas combined are given in Table 5.21. As indicated by the data in this section, yellowfin tuna are imported in the greatest quantity of all fresh and frozen tuna products. The annual value and total amount of yellowfin imports had generally, gradually increased from 1999 – 2007, and then fell in 2008. Most imported yellowfin products are fresh.

Table 5.21 Imports of Yellowfin Tuna Into the United States From All Ocean Areas Combined: 1999-2008. Source: Census Bureau data.

Year	Fresh		Frozen		Total for all Imports	
	MT	US$ (million)	MT	US$ (million)	MT	US$ (million)
1999	11,756	63.04	9,411	24.90	21,168	87.94
2000	13,153	70.27	3,290	18.73	16,443	89.00
2001	15,563	85.50	3,967	23.45	19,530	108.95
2002	15,966	95.22	4,619	29.31	20,585	124.53
2003	15,299	94.03	5,579	39.67	20,878	133.71
2004	15,624	99.41	5,833	35.35	21,457	134.96
2005	17,064	116.58	6,002	46.89	23,066	163.47
2006	17,792	126.47	5,442	42.78	23,234	169.25
2007	17,985	137.42	5,506	44.26	23,492	181.69
2008	15,904	129.59	3,847	27.97	19,751	157.56

NOTE: Imports may be whole weight (ww) or product weight (dw); data are preliminary and subject to change.

The amount of albacore imports from all ocean areas has generally declined since 1999 (Table 5.22) with a slight increase in 2008. In 1999, albacore imports were valued at $144 million while in 2005 the value dropped to approximately $5 million, and have remained fairly low. Import amounts and value have been fairly stable over the last several years. (Products in airtight containers (*e.g.*, cans or foil pouches) are not included in these data.)

Table 5.22 Imports of Albacore Tuna into the United States From All Ocean Areas Combined: 1999-2008. Source: Census Bureau data.

Year	Fresh		Frozen		Total for all Imports	
	MT	US$ (million)	MT	US$ (million)	MT	US$ (million)
1999	1,776	5.39	63,284	139.50	65,060	144.89
2000	1,843	6.42	51,001	127.33	52,845	133.76
2001	1,107	3.85	40,428	105.58	41,536	109.43
2002	1,296	4.81	11,903	24.49	13,200	29.31
2003	1,062	4.11	12,569	25.90	13,632	30.02
2004	1,004	3.12	4,943	11.67	5,947	14.80
2005	706	2.38	1,016	2.96	1,722	5.34
2006	876	3.54	667	1.71	1,543	5.25
2007	945	3.86	718	1.98	1,664	5.86
2008	703	2.95	1,632	4.73	2,335	7.68

Note: Imports may be whole weight (ww) or product weight (dw); data are preliminary and subject to change.

Skipjack tuna imports into the United States are comprised mainly of frozen product (Table 5.23). The amount and value of skipjack imports decreased dramatically in 2000, and have been variable but low since. (Products in airtight containers (e.g., cans or foil pouches) are not included in these data.)

Table 5.23 Imports of Skipjack Tuna From All Ocean Areas Combined Into the United States: 1999-2008. Source: U.S. Census Bureau data.

Year	Fresh		Frozen		Total for all Imports	
	MT	US$ (million)	MT	US$ (million)	MT	US$ (million)
1999	0	0	8,238	6.30	8,238	6.30
2000	0	0	904	2.75	904	2.75
2001	<1	<0.01	377	0.61	378	0.62
2002	<1	0.01	824	0.83	825	0.84
2003	0	0	224	0.43	224	0.43
2004	<1	<0.01	110	0.26	112	0.27

Year	Fresh		Frozen		Total for all Imports	
	MT	US$ (million)	MT	US$ (million)	MT	US$ (million)
2005	0	0	652	0.67	652	0.67
2006	140	0.14	883	0.84	1,023	0.98
2007	31	0.06	835	0.73	866	0.79
2008	14	0.02	685	0.77	699	0.79

Note: Imports may be whole weight (ww) or product weight (dw); data are preliminary and subject to change.

5.3.3.3 Swordfish Imports

Table 5.24 summarizes swordfish import data collected by NMFS' Swordfish Statistical Document Program for the 2008 calendar year. According to these data, most swordfish imports were Pacific Ocean product. For Atlantic product, most imports came from Canada, followed by Brazil. CBP data located at the bottom of the table reflect a larger amount of imports than reported by the import monitoring program, and may be used by NMFS staff to follow up with importers, collect statistical documents that have not been submitted, and enforce dealer reporting requirements.

Table 5.24 Swordfish Import Data for the 2008 Calendar Year Collected Under the NMFS Swordfish Statistical Document Program. (np=not provided)

Flag of Harvesting Vessel	Ocean Area of Orgin								Total (mt dw)
	Atlantic (mt dw)	North Atlantic (mt dw)	South Atlantic (mt dw)	Med. (mt dw)	Pacific (mt dw)	Western Pacific (mt dw)	Indian (mt dw)	np (mt dw)	
Australia							16.47	0.76	17.23
Bandeira Marroquina			1.41						1.41
Brazil	8.17		437.60		0.31			0.87	446.95
Canada		825.49							825.49
Chile					315.41				315.41
China					10.02				10.02
Columbia					0.16				0.16
Costa Rica					138.02				138.02
Ecuador			0.16	26.98	420.18			4.45	451.77
Fiji Islands					8.90			0.16	9.06
Indonesia					19.05		321.54	0.10	340.69
Japan					7.17				7.17
Malaysia							60.68		60.68
Mexico		0.44			221.04			0.84	222.31
New Zealand								0.95	0.95

Flag of Harvesting Vessel	Ocean Area of Orgin								Total (mt dw)
	Atlantic (mt dw)	North Atlantic (mt dw)	South Atlantic (mt dw)	Med. (mt dw)	Pacific (mt dw)	Western Pacific (mt dw)	Indian (mt dw)	np (mt dw)	
Nicaragua					6.75				6.75
Oman				35.67			1.38		37.05
Panama					1,527.83				1527.83
South Africa		0.73	38.86				120.43	1.49	161.52
St. Vincent & The Grenadines			4.69						4.69
Taiwan			1.65				39.28		40.93
Trinidad & Tobago		12.76						0.07	12.82
Uruguay		6.72	104.95						111.68
Venezuela		2.60							2.60
Vietnam					133.71				133.71
np		0.95	6.04	5.05	290.67			0.18	302.90
SD Total	8.17	849.69	595.37	67.70	3,099.23	0.00	559.78	9.86	5189.79
CBP Total									9,339.64
Difference									4,149.86

Table 5.24 indicates the amount and value of swordfish products imported by the United States from 1999 – 2008, as recorded by the U.S. Census Bureau, for all ocean areas combined. New import product categories were added in 2007. The amount of each product imported per year and annual totals for product and value were fairly consistent over the past several years. Total imports have fallen over the last two years.

Table 5.25 Imported Swordfish Products by Year: 1999-2008. Source: Census Bureau data.

Year	Fresh (MT)		Frozen (MT)			Total for all Imports	
	Steaks	Other	Fillets	Steaks	Other	MT	US$ (million)
1999	81	8595	4377	401	386	13,842	71.70
2000	161	8626	4833	524	167	14,314	85.57
2001	71	8982	3814	710	119	13,697	81.89
2002	195	9726	4156	956	677	15,711	88.26
2003	147	8079	3929	433	560	13,150	75.62

Year	Fresh (MT)			Frozen (MT)					Total for all Imports	
	Steaks		Other	Fillets	Steaks	Other			MT	US$ (million)
2004	157		6568	3261	387	351			10,726	70.95
2005	172		6388	2957	367	304			10,187	77.17
2006	77		6830	2875	351	201			10,334	75.63
*New Categories in 2007	*Fillets	Steaks	Other	Fillets	Steaks	*Meat >6.8 kg	*Meat <=6.8 kg	Other		
2007	174	84	5412	2520	171	118	737	205	9,422	70.85
2008	96	13	5658	2673	170	55	207	88	8,962	68.98

NOTE: Imports may be whole weight (ww) or product weight (dw); data are preliminary and subject to change.

5.3.3.4 Shark Imports

Similar to tuna imports other than bluefin tuna and frozen bigeye tuna, NMFS does not require shark importers to collect and submit information regarding the ocean area of catch. Shark imports are also not categorized by species, and lack specific product information on imported shark meat such as the proportion of fillets and steaks. The condition of shark fin imports; e.g., wet, dried, or further processed products such as canned shark fin soup, is also not collected. There is no longer a separate tariff code for shark leather, so its trade is not tracked by CBP or Census Bureau data.

The United States may be an important trans-shipment port for shark fins, which may be imported wet, processed, and then exported dried. It is also probable that U.S.-caught shark fins are exported to Hong Kong or Singapore for processing, and then imported back into the United States for consumption by urban-dwelling Asian Americans (Rose, 1996).

Table 5.26 summarizes Census Bureau data on shark imports for 1999 through 2008. Imports of fresh shark products and shark fins have decreased significantly since 1999. As of July 2, 2008, shark importers, exporters, and re-exporters are required to be permitted under NMFS' HMS International Trade Permit regulations (73 FR 31380). Permitting of shark fin traders was implemented to assist in enforcement and monitoring trade of this valuable commodity.

From 1999 to 2008, the overall annual amount and value of shark imports has fluctuated. Imports of dried shark fins has been increasing gradually since 2003.

Table 5.26 U.S. Imports of Shark Products From All Ocean Areas Combined: 1999-2008 Source: Census Bureau data.

Year	Shark Fins Dried		Non-specified Fresh Shark		Non-specified Frozen Shark		Total For All Imports	
	MT	US$ (million)	MT	US$ (million)	MT	US$ (million)	MT	US$ (million)
1999	59	2.10	1,095	2.03	105	.62	1,260	4.76
2000	66	2.35	1,066	1.85	90	.57	1,222	4.79
2001	50	1.08	913	1.38	123	1.78	1,087	4.25
2002	39	1.02	797	1.24	91	1.09	928	3.35
2003	11	0.01	515	0.72	100	0.99	626	1.82
2004	14	0.34	650	1.00	156	2.35	821	3.70
2005	27	0.75	537	1.02	147	2.27	711	4.04
2006	28	1.38	338	0.68	93	1.35	459	3.41
2007	29	1.68	548	1.03	174	1.04	751	3.75
2008	29	1.74	348	0.72	189	1.88	566	4.34

NOTE: Imports may be whole weight (ww) or product weight (dw); data are preliminary and subject to change.

5.3.3.5 Summary of U.S. Imports of Atlantic HMS

The import data in this section show that many HMS species are part of a valuable import market. As discussed previously regarding exports, most data documenting imports include products harvested from many ocean areas, not just the Atlantic Ocean. However, the statistical document programs for bluefin tuna, swordfish, and frozen bigeye tuna provide information specifically about product harvested from the Atlantic Ocean and imported into the United States.

5.3.4 The Use of Trade Data for Management Purposes

Trade data has been used in a number of ways to support the international management of HMS. When appropriate, the SCRS uses trade data on bluefin tuna, swordfish, bigeye tuna, and yellowfin tuna that are submitted to ICCAT as an indication of landings trends. These data can then be used to augment estimates of fishing mortality of these species, which improves scientific stock assessments. In addition, these data can be used to assist in assessing compliance with ICCAT recommendations and identify those countries whose fishing practices diminish the effectiveness of ICCAT conservation and management measures. On several occasions, ICCAT has adopted recommendations to address the lack of compliance with management programs for the bluefin tuna, bigeye tuna, and North and South Atlantic swordfish fisheries by ICCAT members. Penalties for non-compliance or fishing in a manner that diminishes the effectiveness of ICCAT conservation measures may include catch limit reductions and, if necessary, trade restrictive measures.

For example, an analysis of vessel sighting and Japanese bluefin statistical document data led to the 1996 determination that fishing vessels from the countries of Panama, Honduras, and Belize were fishing in a manner that diminished the effectiveness of the bluefin tuna rebuilding program, and resulted in a 1996 ICCAT recommendation for sanctions against the import of bluefin tuna from these countries (Table 5.27). In 1999, ICCAT recommended this trade restriction on Panama be lifted as a result of the Government of Panama's efforts to substantially reduce fishing vessel activities deemed inconsistent with ICCAT measures. In 2001, Honduras became a member of ICCAT, and based on this change in status and Honduras' significant efforts to control its fleet and address ICCAT concerns, ICCAT recommended lifting trade sanctions for bluefin tuna. The bluefin sanction for Belize was lifted by ICCAT in 2002.

In another example, import data from 1997–1999 revealed significant Atlantic bluefin tuna exports from Equatorial Guinea despite the fact that a zero catch limit was in effect for that country. The government of Equatorial Guinea had not responded to ICCAT inquiries and had reported no bluefin tuna catch data to ICCAT, and as a result ICCAT recommended trade restrictions as a penalty for non-compliance. Based on information regarding improved compliance presented by Equatorial Guinea at the 2004 ICCAT meeting, specifically, that Equatorial Guinea had canceled licenses and flags of large-scale longline vessels previously participating in illegal, unreported, unregulated (IUU) tuna fishing in the Convention area and guaranteed compliance with ICCAT conservation and management measures, the trade sanction was lifted by ICCAT. As indicated in Table 5.27 most of the trade sanctions recommended by ICCAT since 1996 have been lifted. In fact, only trade sanctions for Bolivia and Georgia remain in effect.

Table 5.27 Summary and Current Status of ICCAT Recommended Trade Sanctions for Bluefin Tuna, Swordfish, and Bigeye Tuna Implemented by the United States.

Country	Species	ICCAT Recommended Sanction	U.S. Sanction Implemented	ICCAT Sanction Lifted	U.S. Sanction Lifted
Panama	Bluefin	1996	1997	1999	2000
Honduras	Bluefin	1996	1997	2001	2004
	Bigeye	2000	2002	2002	2004
	Swordfish	1999	2000	2001	2004
Belize	Bluefin	1996	1997	2002	2004
	Swordfish	1999	2000	2002	2004
	Bigeye	2000	2002	2002	2004
Equatorial Guinea	Bluefin	1999	2000	2004	2005
	Bigeye	2000	2002	2004	2005
Cambodia	Bigeye	2000	2002	2004	2005
St. Vincent & the Grenadines	Bigeye	2000	2002	2002	2004
Bolivia	Bigeye	2002	2004	In effect	In effect
Sierra Leone	Bluefin	2002	2004	2004	2005
	Bigeye	2002	2004	2004	2005
	Swordfish	2002	2004	2004	2005
Georgia	Bigeye	2003	2004	In effect	In effect

5.4 Recreational Fisheries

While a comprehensive understanding of the economic impacts of HMS recreational fishing is not currently available, existing studies indicate that HMS recreational fishing provides significant positive economic impacts to coastal communities. These positive economic impacts derive from individual angler expenditures, recreational charters, tournaments, and the shoreside businesses that support those activities. The net economic and social benefits of HMS recreational fishing in the United States are likely positive and some of the ecological impacts are mitigated by the strong catch-and-release ethic in this fishery.

5.4.1 Recreational Angling

An economic survey completed by the U.S. Fish and Wildlife Service (USFWS) in 2006 found that for the entire United States 7.7 million saltwater anglers (including anglers in state waters) went on approximately 67 million fishing trips and spent approximately $8.9 billion (USFWS, 2006). These participation rates are down from the 2001 survey which found 9.1 million saltwater anglers (including anglers in state waters) went on approximately 72 million fishing trips and spent approximately $8.4 billion (USFWS, 2001). The 2006 survey found saltwater anglers spent $5.3 billion on trip-related costs and $3.6 billion on equipment (USFWS, 2006). Expenditure on trip-related costs increased 17 percent from 2001, but equipment expenditures have declined seven percent. These expenditures included lodging, transportation to and from the coastal community, vessel fees, equipment rental, bait, auxiliary purchases (e.g., binoculars, cameras, film, foul weather clothing, etc.), and fishing licenses. Approximately 79 percent of the saltwater anglers surveyed fished in their home state in 2006, compared to 76 percent in 2001 (USFWS, 2001).

Specific information regarding angler expenditures for trips targeting HMS species was extracted from the recreational fishing expenditure survey add-on (1998 in the Northeast, 1999 – 2000 in the Southeast) to the NMFS' Marine Recreational Fisheries Statistics Survey (MRFSS). These angler expenditure data were analyzed on a per person per trip-day level and reported in 2003 dollars. The expenditure data includes the costs of tackle, food, lodging, bait, ice, boat fuel, processing, transportation, party/charter fees, access/boat launching, and equipment rental. The overall average expenditure on HMS related trips is estimated to be $122 per person per day. Specifically, expenditures are estimated to be $686 per person per day on billfish directed trips (based on a low sample size), $85 on pelagic shark directed trips, $95 on LCS directed trips, $81 on SCS directed trips, and $106 on tuna directed trips.

The American Sportfishing Association (ASA) also has a report listing the 2006 economic impact of sportfishing on specific states. This report states that all sportfishing (in both federal and state waters) has an overall economic importance of $125 billion dollars. ASA estimates 8,528,000 anglers participate in saltwater fishing. These saltwater anglers spent $11 billion in retail sales, resulting in 263,000 jobs, and $9 billion in salaries, wages, and business earnings in 2006. Saltwater fishing contributed $30 billion of the overall economic impact estimated. Florida, Texas, South Carolina, and North Carolina are among the top ten states in terms of overall economic expenditures for both saltwater and freshwater fishing. Florida is also one of the top states in terms of economic impact of saltwater fishing with $3.0 billion in angler

expenditures, $5.1 billion in overall economic impact, $1.6 billion in salaries and wages related to fishing, and 51,588 fishing related jobs (ASA, 2008).

In 2003, Ditton and Stoll published a paper that surveyed the literature regarding what is currently known about the social and economic aspects of recreational billfish fisheries. It was estimated that 230,000 anglers in the United States spent 2,136,899 days fishing for billfish in 1991. This is approximately 3.6 percent of all saltwater anglers over age 16. The states with the highest number of billfish anglers are Florida, California, North Carolina, Hawaii, and Texas, in descending order. Billfish anglers studied in the U.S. Atlantic, Puerto Rico, and Costa Rica fished between 39 and 43 days per year.

Billfish recreational anglers tend to spend a great deal of money on trips. Ditton and Stoll (2003) report that a 1990 study of U.S. total trip costs for a typical billfish angler estimated a mean expenditure of $2,105 per trip for the Atlantic and $1,052 per trip for Puerto Rico. The aggregate economic impact of billfish fishing trips in the U.S. Atlantic is conservatively estimated to be $22.7 million annually.

In addition to the economic impact of recreational billfish angling, Ditton and Stoll (2003), using a contingent valuation method, estimated consumer's surplus or net economic benefit to maintain current billfish populations in the U.S. Atlantic to be $497 per billfish angler per year in the U.S. Atlantic and $480 in Puerto Rico. They also estimate that the number of annual billfish anglers in the U.S. Atlantic to be 7,915 and 1,627 in Puerto Rico. The aggregate willingness-to-pay for maintaining current billfish populations is $3.93 million in the U.S. Atlantic and 0.78 million in Puerto Rico. The aggregate direct impact of billfish expenditures is estimated to be $15.13 million for the U.S. Atlantic and $32.40 million for Puerto Rico. Thus, the total aggregate economic value of billfish angler fishing is $19.06 million per year for the U.S. Atlantic and $33.18 million per year for Puerto Rico.

5.4.2 Atlantic HMS Tournaments

Generally, HMS tournaments last from three to seven days, but lengths can range from one day to an entire fishing season. Similarly, average entry fees can range from approximately $0 to $5,000 per boat (average approximately $500/boat – $1,000/boat), depending largely upon the magnitude of the prize money that is being awarded. The entry fee would pay for a maximum of two to six anglers per team during the course of the tournament. Additional anglers can, in some tournaments, join the team at a reduced rate of between $50 and $450. The team entry fee did not appear to be directly proportional to the number of anglers per team, but rather with the amount of money available for prizes and, possibly, the species being targeted. Prizes may include citations, T-shirts, trophies, fishing tackle, automobiles, boats, or other similar items, but most often consists of cash awards. In general, it appears that billfish and tuna tournaments charge higher entry fees and award more prize money than shark and swordfish tournaments, although all species have a wide range.

Cash awards distributed in HMS tournaments can be quite substantial. Several of the largest tournaments, some of which are described below, are part of the World Billfish Series

Tournament Trail whereby regional winners are invited to compete in the World Billfish Series Grand Championship for a new automobile and a bronze sculpture. Other tournament series include the International Game Fish Association (IGFA) Rolex Tournament of Champions, and the South Carolina Governor's Cup. White marlin is a top billfish species from Cape Hatteras, North Carolina to the eastern tip of Georges Bank from June through October each year. The White Marlin Open in Ocean City, Maryland, which is billed as the "world's richest fishing tournament," awarded $903,442 in 2009 to the vessel catching the largest white marlin and $454,999 to the vessel catching the largest blue marlin. The 26st Annual Pirate's Cove Billfish Tournament in North Carolina awarded over $600 thousand in prizes in 2009, with the top boat garnering over $274,429 for winning in five categories. Total prize money awarded in the Big Rock Tournament in North Carolina has exceeded $1 million since 1998. The 2009 winner of the Big Rock Tournament won $746,820 from a total tournament purse of $1,752,366.

Blue marlin, sailfish, and tunas are also often targeted in fishing tournaments, including those discussed above. In 2008, blue marlin was the HMS most frequently identified as a prize category in registered HMS tournaments. Sixty-seven teams participated in the 2009 Emerald Coast Blue Marlin Classic at Sandestin, Florida, with over $1.29 million in cash prizes and the top boat receiving $325,203. The 34th Annual Pensacola (Florida) International Billfish Tournament indicated that it would award over $325,000 in cash and prizes in 2004. The World Sailfish Championship in Key West, Florida had a $100,000 guaranteed first prize for 2009. In South Carolina, the Megadock Billfishing Tournament awarded a $130,247 prize for the first place winner of this tournament that involved 74 boats competing for $1 million in total prize money. The 2009 Florida Billfish Masters Tournament in Miami, Florida awarded over $130,000 in prize money, with the top boat receiving over $56,000. Sixty-two boats competed in the 2008 Babylon Tuna Club Invitational in Babylon, New York for over $100,000 in cash prizes, and the Mid-Atlantic Tuna Tournament sponsored by the South Jersey Marina in Cape May, New Jersey anticipates awarding over $250,000 in prizes in 2009.

Several tournaments target sharks. Many shark tournaments occur in New England, New York, and New Jersey, although other regions hold shark tournaments as well. In 2008, the 28th Annual South Jersey Shark Tournament hosted 180 boats and awarded over $336,005 in prize money, with an entry fee of $525 per boat. The "Mako Fever" tournament, sponsored by the Jersey Coast Shark Anglers, in 2009 awarded over $55,000 in prizes, with an entry fee of $350 per boat per day. In 2009, the 23rd Annual Oak Bluffs Monster Shark Tournament in Martha's Vineyard featured 130 participating boats which paid an entry fee of $1,375 per boat.

While fishing tournaments are an important component of Atlantic HMS recreational fisheries and provide socioeconomic benefits to associated communities, there are some organizations that oppose these tournaments. For the past several years, for example, the Humane Society of the United States has petitioned NMFS to halt all shark tournaments.

Swordfish tournaments have gained increased popularity in recent years, especially on the east coast of Florida, as the swordfish population has recovered. Events include the Islamorada Swordfish Tournament that began in 2004, and the Miami Swordfish Tournament that began in 2003. The winner of this tournament series in 2009 will receive a $10,000 prize

and a $5,000 prize will go to the boat catching the largest fish of the series. The registration fee was $1,000 per boat for these tournaments in 2009.

In addition to official prize money, many fishing tournaments may also conduct a "calcutta" whereby anglers pay from $200 to $5,000 to win more money than the advertised tournament prizes for a particular fish. Tournament participants do not have to enter calcuttas. Tournaments with calcuttas generally offer different levels depending upon the amount of money an angler is willing to put down. Calcutta prize money is distributed based on the percentage of the total amount entered into that Calcutta. Therefore, first place winner of a low level Calcutta (entry fee ~$200) could win less than a last place winner in a high level calcutta (entry fee ~$1000). On the tournament websites, it was not always clear if the total amount of prizes distributed by the tournament included prize money from the calcuttas or the estimated price of any equipment. As such, the range of prizes discussed above could be a combination of fish prize money, calcutta prize money, and equipment/trophies.

Fishing tournaments can sometimes generate a substantial amount of money for surrounding communities and local businesses. Besides the entry fee to the tournament and possibly the calcutta, anglers may also pay for marina space and gas (if they have their own vessel), vessel rental (if they do not have their own vessel), meals and awards dinners (if not covered by the entry fee), hotel, fishing equipment, travel costs to and from the tournament, camera equipment, and other miscellaneous expenses. Fisher and Ditton (1992) found that the average angler who attended a billfish tournament spent $2,147 per trip (2.59 days), and that billfish tournament anglers spent an estimated $180 million (tournament and non-tournament trips) in 1989. Ditton and Clark (1994) estimated annual expenditures for Puerto Rican billfish fishing trips (tournaments and non-tournaments) at $21.5 million. More recently, Ditton *et al*., (2000) estimated that the total expenditure (direct economic impact) associated with the 1999 Pirates Cove Billfish Tournament, not including registration fees, was approximately $2,072,518. The total expenditure (direct economic impact) associated with the 2000 Virginia Beach Red, White, and Blue Tournament was estimated at approximately $450,359 (Thailing *et al*., 2001). These estimated direct expenditures do not include economic effects that may ripple through the local economy leading to a total impact exceeding that of the original purchases by anglers (i.e., the multiplier effect). Less direct, but equally important, fishing tournaments may serve to generally promote the local tourist industry in coastal communities. In a survey of participants in the 1999 Pirates Cove Billfish Tournament, Ditton *et al*., (2000) found that almost 80 percent of tournament anglers were from outside of the tournament's county. For this reason, tourism bureaus, chambers of commerce, resorts, and state and local governments often sponsor fishing tournaments.

5.4.3 Atlantic HMS Charter and Party Boat Operations

At the end of 2004, NMFS collected market information regarding advertised charterboat rates. The analysis of this data focused on observations of advertised rates on the internet for full day charters. Full day charters vary from 6 to 14 hours long with a typical trip being 10 hours. Most vessels can accommodate six passengers, but this also varies from two to 12 passengers. The average price for a full day boat charter was $1,053 in 2004. Sutton *et al.,* (1999) surveyed

charterboats throughout Alabama, Mississippi, Louisiana, and Texas in 1998 and found the average charterboat base fee to be $762 for a full day trip. Holland *et al.* (1999) conducted a similar study on charterboats in Florida, Georgia, South Carolina, and North Carolina and found the average fee for full day trips to be $554, $562, $661, and $701, respectively. Comparing these two studies conducted in the late 1990s to the average advertised daily HMS charterboat rate in 2004, it is apparent that there has been a significant gain in charterboat rates.

Chapter 5 References

American Sportfishing Association 2008. Sportfishing in America. http://www.asafishing.org/images/statistics/resources/Sportfishing%20in%20America%20Rev.%207%2008.pdf

Ditton, R.B., D.K. Anderson, J.F. Thigpen III, B.L. Bohnsack, and S.G. Sutton. 2000. 1999 Pirates Cove Big Game Tournaments: Participants' Characteristics, Participation in Fishing, Attitudes, Expenditures, and Economic Impacts. Human Dimensions of Fisheries Laboratory Report #HD-615, Texas A & M University, College Station, TX. 126 pp.

Ditton, R.B. and D.J. Clark. 1994. Characteristics, Attitudes, Catch-and-release Behavior, and Expenditures of Billfish Tournament Anglers in Puerto Rico. Report prepared for The Billfish Foundation, Ft. Lauderdale, FL. 27pp.

Ditton, R.B. and J.R. Stoll. 2003. Social and economic perspective on recreational billfish fisheries. Marine & Freshwater Research (54)4: 545-554.

Fisher, M.R. and R.B. Ditton. 1992. Characteristics of Billfish Anglers in the U.S. Atlantic Ocean. Marine Fisheries Review 54(1): 1-6.

Holland, S. M., A. J. Fedler, and J. W. Milon. 1999. The operations and economics of the charter and head boat fleets of the Eastern Gulf of Mexico and South Atlantic Coasts. Memo NOAA Fisheries - F/SPO-38.

NMFS Office of Science and Technology foreign trade statistics website: http://www.st.nmfs.noaa.gov/st1/trade/cumulative_data/TradeDataProduct.html

NMFS. 1997. 1997 Shark Evaluation Report. NOAA, Southeast Fisheries Science Center, Miami, FL. 12 p.

NMFS. 2008. Stock Assessment and Fishery Evaluation (SAFE) Report for Atlantic Highly Migratory Species, 2007. NMFS Office of Sustainable Fisheries, Silver Spring, MD. 446 p.

NMFS. 2009a. National Report of the United States (to ICCAT): 2009. NOAA, U.S. Department of Commerce, Silver Spring, MD. NAT/03/06.

NMFS. 2009b. Fisheries of the United States: 2009. E.S. Pritchard, Editor. Office of Science and Technology, Fisheries Statistics and Economics Division, NOAA, U.S. Department of Commerce, Silver Spring, MD.

NMFS. 2009c. U.S National Report to ICCAT, 2007. NMFS Office of Sustainable Fisheries, Silver Spring, MD. 62 p.

Pritchard, E.S. 2009. Fisheries of the United States, 2008. NMFS. Office of Science and Technology. Silver Spring, MD. 104 p.

Rose, D. 1996. An Overview of World Trade in Sharks. TRAFFIC International. 105 p.

Sutton, S.G., R.B. Ditton, J.R. Stoll, and J.W. Milon. 1999. A cross-sectional study and longitudinal perspective on the social and economic characteristics of the charter and party boat fishing industry of Alabama, Mississippi, Louisiana, and Texas. Report prepared for the National Marine Fisheries Service with MARFIN funding support (Grant Number NA 77FF0551.) Human Dimensions of Fisheries Research Laboratory Report #HD-612. Texas A&M University, College Station. 198p.

Thailing, C.E., R.B. Ditton, D.K. Anderson, T.J. Murray, J.E. Kirkley, J. Lucy. 2001. The 2000 Virginia Beach Red, White, and Blue Fishing Tournament: Participants' Characteristics, Attitudes, Expenditures, and Economic Impacts. VIMS, College of William and Mary, Virginia Marine Resources Report No. 2001-9, VSG-01-88, Texas A & M University, College Station, TX. 110pp.

U.S. Fish and Wildlife Service and U.S. Department of Commerce U.S. Census Bureau. 2001 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation.

U.S. Fish and Wildlife Service and U.S. Department of Commerce U.S. Census Bureau. 2006 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation. FHW/-6-NAT.

6.0 COMMUNITY PROFILES

This Chapter identifies and describes the HMS fishing communities, as required under the Magnuson-Stevens Act and other laws, and consolidates all of the communities profiled in previous HMS FMPs or FMP amendments and updates the community information where possible. Of the communities profiled in this chapter, ten were originally selected due to the proportion of HMS landings in the town, the relationship between the geographic communities and the fishing fleets, the existence of other community studies, and input from the HMS and Billfish Advisory Panels (which preceded the combined HMS Advisory Panel that currently exists). The remaining 14 communities, although not selected initially, have been identified as communities that could be impacted by changes to the current HMS regulations because of the number of HMS permits associated with these communities, and their community profile information has been incorporated into the document.

6.1 Introduction

The Magnuson-Stevens Act requires, among other things, that all FMPs include a fishery impact statement intended to assess, specify, and describe the likely effects of the measures on fishermen and fishing communities (§303(a)(9)).

The National Environmental Policy Act (NEPA) also requires federal agencies to consider the interactions of natural and human environments by using a "systematic, interdisciplinary approach which will ensure the integrated use of the natural and social sciences in planning and decision-making" (§102(2)(A)). Moreover, agencies need to address the aesthetic, historic, cultural, economic, social, or health effects, which may be direct, indirect, or cumulative. Consideration of social impacts is a growing concern as fisheries experience increased participation and/or declines in stocks. The consequences of management actions need to be examined to better ascertain and, if necessary and possible, mitigate regulatory impacts on affected constituents.

Social impacts are generally the consequences to human populations resulting from some type of public or private action. Those consequences may include alterations to the ways in which people live, work or play, relate to one another, and organize to meet their needs. In addition, cultural impacts, which may involve changes in values and beliefs that affect people's way of identifying themselves within their occupation, communities, and society in general are included under this interpretation. Social impact analyses help determine the consequences of policy action in advance by comparing the status quo with the projected impacts. Community profiles are an initial step in the social impact assessment process. Although public hearings and scoping meetings provide input from those concerned with a particular action, they do not constitute a full overview of the fishery.

The Magnuson-Stevens Act outlines a set of National Standards (NS) that apply to all fishery management plans and the implementation of regulations. Specifically, NS 8 notes that:

"Conservation and management measures shall, consistent with the conservation requirements of this Act (including the prevention of overfishing and rebuilding of overfished stocks), take into account the importance of fishery resources to fishing communities in order to: (1) provide for the sustained participation of such communities; and, (2) to the extent practicable, minimize adverse economic impacts on such communities."

(§301(a)(8)). See also 50 CFR §600.345 for National Standard 8 Guidelines. "Sustained participation" is defined to mean continued access to the fishery within the constraints of the condition of the resource (50 CFR §600.345(b)(4)).

It should be clearly noted that NS 8 "does not constitute a basis for allocation of resources to a specific fishing community nor for providing preferential treatment based on residence in a fishing community" (50 CFR §600.345(b)(2)).

The Magnuson-Stevens Act further defines a "fishing community" as: "...a community that is substantially dependent upon or substantially engaged in the harvest or processing of fishery resources to meet social and economic needs, and includes fishing vessel owners, operators, and crew, and United States fish processors that are based in such community."

(§3(17)) The National Standard guidelines expand upon the definition of a fishing community, and state that, "A fishing community is a social or economic group whose members reside in a specific location and share a common dependency on commercial, recreational, or subsistence fishing or on directly related fisheries-dependent services and industries (for example, boatyards, ice suppliers, tackle shops)" (50 CFR §600.345(b)(2)).

NMFS (2001) guidelines for social impact assessments specify that the following elements are utilized in the development of FMPs and FMP amendments:

1. The size and demographic characteristics of the fishery-related work force residing in the area; these determine demographic, income, and employment effects in relation to the work force as a whole, by community and region.

2. The cultural issues of attitudes, beliefs, and values of fishermen, fishery-related workers, other stakeholders, and their communities.

3. The effects of proposed actions on social structure and organization; that is, on the ability to provide necessary social support and services to families and communities.

4. The non-economic social aspects of the proposed action or policy; these include life-style issues, health and safety issues, and the non-consumptive and recreational use of living marine resources and their habitats.

5. The historical dependence on and participation in the fishery by fishermen and communities, reflected in the structure of fishing practices, income distribution and rights.

6.2 Methodology

6.2.1 Previous community profiles and assessments

NMFS contracted with Dr. Doug Wilson, from the Ecopolicy Center for Agriculture, Environmental and Resource Issues at Rutgers, the State University of New Jersey, to help develop the community profiles and social impact assessments for the 1999 HMS FMP and Amendment 1 to the FMP for Atlantic Billfish. Dr. Wilson and his colleagues completed their fieldwork in July 1998. This study covered commercial and recreational Atlantic HMS fisheries extending along the Atlantic and Gulf coasts from Maine to Texas and in the Caribbean. The study investigated the social and cultural characteristics of fishing communities in five states and one U.S. territory: Massachusetts, New Jersey, North Carolina, Florida, Louisiana, and Puerto Rico. These areas were selected because they each had important fishing communities that could be affected by the 1999 FMP for Atlantic Tunas, Swordfish, and Sharks and the 1999 Atlantic Billfish FMP Amendment 1, and because they are fairly evenly spread along the Atlantic and Gulf coasts and the Caribbean. The study compiled basic sociological information from at least two coastal communities from each state or territory. For each state or territory, a profile of basic sociologic information was compiled, with at least two coastal communities visited for further analysis. Towns were selected based on HMS landings data, the relationship between the geographic communities and the fishing fleets, the existence of other community studies, and inputs from the Advisory Panels for HMS and Billfish. The information in this document incorporates by reference the Wilson *et al.*, (1998) study of the HMS fishery and the work of McCay and Cieri (2000) for the Mid-Atlantic Fishery Management Council, "The Fishing Ports of the Mid-Atlantic" (http://www.st.nmfs.noaa.gov/st1/econ/cia/McCay_Port_Study-Apr2000_Revised.pdf)

Additionally, NMFS contracted with the Virginia Institute of Marine Science (VIMS) at the College of William and Mary to re-evaluate several of the baseline HMS communities (Kirkley, 2005). The VIMS study gathered a profile of basic sociological information for the principal states involved with the Atlantic shark fishery. From the 255 communities identified as involved in the 2001 commercial fishery, Amendment 1 to the 1999 HMS FMP focused on specific towns based on shark landings data, the size of the shark fishing fleet, the relationship between the geographic communities and the fishing fleets, and the existence of other community studies. While the recreational fishery is an important component in the overall shark fishery, the VIMS study did not profile the shark recreational fishery because participation and landings were not documented in a manner that permits community identification. The Wilson *et al*., study selected for profile, only the recreational fisheries found within commercial fishing communities due to the lack of community-based data for the sport fishery. To the extent that it is available, the information on the HMS-related recreational fisheries has been incorporated into the community profiles.

Following the Consolidated HMS FMP, which published in 2006, NMFS contracted MRAG Americas, Inc. to create a report updating current HMS fishery community profiles. The report utilized HMS permit information and U.S. census data to rank communities according to the percentage of HMS permits, by permit category, and in relation to their overall population; based on a methodology described by Sepez *et al*. (2005). Communities that met the mean percentage for at least one permit category were included and community profile information

was created or updated accordingly. The report identified 14 communities that have not previously been included (Wakefield, Rhode Island; Montauk, New York; Cape May, New Jersey; Ocean City, Maryland; Atlantic Beach, Beaufort, and Morehead City, North Carolina; Apalachicola, Destin, and Port Salerno, Florida; Orange Beach, Alabama; Grand Isle, Louisiana; and Freeport and Port Aransas, Texas), along with 10 communities that had been included in previous SAFE reports (Gloucester and New Bedford, Massachusetts; Barnegat Light and Brielle, New Jersey; Hatteras Village and Wanchese, North Carolina; Islamorada and Madeira Beach, Florida; and Dulac and Venice, Louisana). This list did not include four communities that had been included in assessments since the 1999 HMS FMP (Fort Pierce, Panama City Beach, and Pompano Beach, Florida; and Arecibo, Puerto Rico). All communities that have been identified by MRAG Americas, Inc. and ones that have been evaluated in the past are included in this assessment to update the most recent community profile information available and to ensure continuity with the 1999 HMS FMP and previous amendments.

The list of communities profiled in the reports noted above is not intended to be an exhaustive record of every HMS-related community in the United States; rather the objective is to give a broad perspective of representative areas. The demographic profile tables found in the 2008 SAFE Report (NMFS, 2008) were modified from previous documents to include the same baseline information for each community profiled, and use both 1990 and 2000 Bureau of the Census data for comparative purposes. A profile for the U.S. Virgin Islands could not be created because the 1990 Census data were not available, and only some of the demographic information was available for 2000. Additionally, a descriptive profile for the Virgin Islands has not been developed for any previous HMS-related actions. The descriptive community profiles in this chapter include information provided by Wilson, *et al.* (1998) and Kirkley (2005), Impact Assessment, Inc. (2004), and recent information obtained from MRAG Americas, Inc. (2008). In this chapter, the community descriptions are organized by state.

Several other chapters in this SAFE report include information that addresses the requirements described Section 6.1 and that is an integral part of any social impact assessment and fishery impact statement. Please refer to the summary of regulatory actions in Chapter 1, description of the fisheries in Chapter 4, the economic evaluation in Chapter 5, and the permit data in Chapter 8.

6.2.1.1 Community Impacts from Hurricanes

This section is an overview of the impacts on HMS communities caused by hurricanes during 2008. Please refer to prior SAFE reports for hurricane impact information prior to 2008.

The 2008 hurricane season, which was above average for most tropical cyclone parameters (Klotzbach and Gray, 2008), generated storms that caused significant impacts to Gulf Coast Communities. Hurricane Gustav made landfall in Louisiana as a Category 2 storm, damaging areas in Louisiana, Alabama, Mississippi and Arkansas with high winds, storm surge, and flooding. Damage costs to these areas are estimated to be at least $5 billion (Lott et. al, 2008). Hurricane Ike followed shortly after Hurricane Gustav, but made landfall over Galveston, Texas as a large Category 2 storm (FEMA, 2008). Ike caused significant damage to coastal areas in Texas, along with areas in Louisiana, Arkansas, Illinois, Pennsylvania, Kentucky, Indiana, Missouri, and Ohio estimated at over $27 billion (Lott et. al, 2008). The Texas Parks and

Wildlife Department estimated the economic impact to the commercial and recreational fisheries in Texas at $650 million, although losses are difficult to estimate because they largely depend on how quickly infrastructure (e.g., boat ramps, processing facilities) can be restored to the area (FEMA, 2008). Damage to offshore oil platforms from Hurricane Ike also led to gasoline shortages in the southeastern United States (Lott et. al, 2008). Combined damage to the Louisiana fishing industry from Hurricanes Gustav and Ike was estimated at $300,000,000 (Times-Picayune, 2008). These impacts, along with high fuel costs and a slowing economy, may have detrimentally affected HMS fishery operations in this region.

6.3 United States Demographic Profile

The U.S. demographic profile has not been updated since the 2000 U.S. Census. Please refer to the 2008 SAFE Report (NMFS, 2008) for detailed U.S. Census information.

6.4 State and Community Profiles

For information regarding HMS fishing activities for individual states and communities, please refer to the 2008 SAFE Report for Atlantic Highly Migratory Species (NMFS, 2008). A copy can be obtained from MRAG Americas, Inc (online at http://www.nmfs.noaa.gov/sfa/hms/hmsdocument_files/SAFEreports.htm). The 2008 SAFE Report contains the most recent information available to NMFS detailing U.S. Census information regarding communities participating in HMS fisheries.

More recent information regarding fishing communities in St. Croix can be found in Stoffle et. al, 2009 (online at https://grunt.sefsc.noaa.gov/P_QryLDS/download/TM582_tm_593.pdf?id=LDS.

The Fisheries of the United States – 2008 (NMFS, 2009) report contains updated figures regarding recreational anglers by state and can be found online at: http://www.st.nmfs.noaa.gov/st1/fus/fus08/fus_2008.pdf

Information regarding HMS permits by state can be found in Chapter 8 of this 2009 SAFE Report.

Chapter 6 References

Childers, Hoyt. 2006. Summer signals peak harvest time and arrival of 2006 hurricane season. National Fisherman. 87(2):20-21.

Federal Emergency Management Agency (FEMA). 2008. Hurricane Ike Impact Report. Available at: http://www.fema.gov/pdf/hazard/hurricane/2008/ike/impact_report.pdf

Kirkley, J.E. 2005. The Communities of the Atlantic Highly Migratory Species (HMS) Fishery: An Overview of Change Associated with the HMS Fishery Management Plan. Department of Coastal and Ocean Policy, School of Marine Science, Virginia Institute of Marine Science, College of William and Mary, Gloucester Point, Virginia. (NOAA-NMFS-HMS contract report).

Klotzbach, P.J., and W.M. Gray. 2008. Summary of 2008 Atlantic Tropical Cyclone Activity and Verification of Author's Seasonal and Monthly Forecasts. Tech rep. Available at: http://hurricane.atmos.colostate.edu/Forecasts/2008/nov2008/nov2008.pdf

Impact Assessment, Inc. 2004. Identifying Communities Associated with the Fishing Industry in Louisiana. La Jolla, California. (NOAA-NMFS-Contract WC133F-02-SE-0297).

Impact Assessment, Inc. 2007. Preliminary assessment of the impacts of Hurricane Katrina on Gulf of Mexico coastal fishing communities. Prepared for the U.S. Department of Commerce, NMFS, Southeast Regional Office, St. Petersburg, Florida. Contract number WC 133F-06-CN-0003.

Ingles, P., and H. McIlvaine-Newsad. 2007. Any Port in the Storm: The Effects of Hurricane Katrina on Two Fishing Communities in Louisiana. NAPA Bulletin 28:69-86.

Lott, N., Ross, T., Houston, T., and A. Smith, 2008: Billion dollar U.S. weather disasters, 1980-2008. Factsheet. NOAA National Climatic Data Center, Asheville, NC, 2 pp.

McCay and Cieri. 2000. Fishing Ports of the Mid-Atlantic. Report to the Mid-Atlantic Fishery Management Council. 183 pp. Available at: http://www.st.nmfs.noaa.gov/st1/econ/cia/McCay_Port_Study-Apr2000_Revised.pdf

MRAG Americas, Inc. 2008. Updated Profiles for HMS Dependant Fishing Communities, Social Impact Assessment Services for HMS Fishing Communities. Solicitation Number: DG133F-06-RQ-0381. Available at: http://www.mragamericas.com/pdf/sr/SIA%20for%20HMS%20Fishing%20Communities%20Final%20Report.pdf

NMFS, 2001. NMFS Operational Guidelines – Fishery Management Process: Appendix 2(g)**:** Guidelines for Assessment of the Social Impact of Fishery Management Actions. Silver Spring, MD: U.S. Department of Commerce, National Marine Fisheries Service.

NMFS. 2005. Effects of Hurricanes Katrina and Rita on the Fishing Industry and Fishing Communities in the Gulf of Mexico: Hearings before the Subcom. on Fisheries and

Oceans of the House Com. on Resources; 109th Cong. (December 15, 2005) (statement by Dr. William Hogarth, Assistant Administrator, National Marine Fisheries Service, National Oceanic and Atmospheric Administration, U.S. Department of Commerce).

NMFS. 2008. Stock Assessment and Fishery Evaluation for Atlantic Highly Migratory Species. National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Office of Sustainable Fisheries, Highly Migratory Species Management Division, Silver Spring, MD. Public Document.

NMFS. 2009. Fisheries of the United States – 2008. Silver Spring, MD: U.S. Department of Commerce, National Marine Fisheries Service, Office of Science and Technology, Fisheries Statistics Division. 103pp.

Stoffle, Brent, James R. Waters, Susan Abbott-Jamieson, Shawn Kelley, David Grasso, Joy Freibaum, Susanne Koestner, Nate O'Meara, Sita Davis, Marissa Stekedee, and Juan Agar. 2009. Can an Island be a Fishing Community: An Examination of St. Croix and its Fisheries. NOAA Technical Memorandum NMFS-SEFSC-593, 57p.

Times-Picayune. 2008. Editorial: First Aid for Fisheries. Sept. 20, 2008. Available at: http://www.nola.com/timespic/stories/index.ssf?/base/news-5/1221888106269520.xml&coll=1

Wilson, D., B.J. McCay, D. Estler, M. Perez-Lugo, J. LaMargue, S. Seminski, and A. Tomczuk. 1998. Social and Cultural Impact Assessment of the Highly Migratory Species Fishery Management Plan and the Amendment to the Atlantic Billfish Fisheries Management Plan. The Ecopolicy Center for Agriculture, Environmental, and Resource Issues, New Jersey Agricultural Experiment Station, Cook College, Rutgers, the State University of New Jersey (NOAA-NMFS-HMS contract report).

7.0 BYCATCH, INCIDENTAL CATCH, AND PROTECTED SPECIES

Bycatch in commercial and recreational fisheries is an important issue for the fishing industry, resource managers, scientists, and the public. Bycatch can result in death or injury to the discarded fish, and it is essential that this component of total fishing-related mortality be incorporated into fish stock assessments and evaluation of management measures. Bycatch precludes other more productive uses of fishery resources and decreases the efficiency of fishing operations. Although not all discarded fish die, bycatch can represent a large source of mortality, which can slow the rebuilding of overfished stocks. Bycatch imposes direct and indirect costs on fishing operations by increasing sorting time and decreasing the amount of gear available to catch target species. Incidental catch concerns also apply to populations of marine mammals, sea turtles, seabirds, and other components of ecosystems which may be protected under other applicable laws and for which there are no commercial or recreational uses but for which existence values may be high.

In 1998, NMFS developed a national bycatch plan, *Managing the Nation's Bycatch* (NMFS, 1998), which includes programs, activities, and recommendations for federally managed fisheries. The national goal of the Agency's bycatch plan activities is to implement conservation and management measures for living marine resources that will minimize, to the extent practicable, bycatch and the mortality of bycatch that cannot be avoided. Inherent in this goal is the need to avoid bycatch, rather than create new ways to utilize bycatch. The plan also established a definition of bycatch as fishery discards, retained incidental catch, and unobserved mortalities resulting from a direct encounter with fishing gear.

7.1 Bycatch Reduction and the Magnuson-Stevens Act

According to the Magnuson-Stevens Act, "The term "bycatch" means fish which are harvested in a fishery, but which are not sold or kept for personal use, and includes economic discards and regulatory discards. Such term does not include fish released alive under a recreational catch and release fishery management program." Fish is defined as finfish, mollusks, crustaceans, and all other forms of marine animal and plant life other than marine mammals and birds. Birds and marine mammals are therefore not considered bycatch under the Magnuson-Stevens Act, but are examined as incidental catch.

National Standard 9 of the Magnuson-Stevens Act requires that fishery conservation and management measures shall, to the extent practicable, minimize bycatch and minimize the mortality of bycatch that cannot be avoided. In many fisheries, it is not practicable to eliminate all bycatch and bycatch mortality. Some relevant examples of fish caught in Atlantic HMS fisheries that are included as bycatch or incidental catch are marlin, undersized swordfish, and bluefin tuna caught by commercial fishing gear; undersized swordfish and tunas in recreational hook and line fisheries; species for which there is little or no market such as blue sharks; and species caught and released in excess of a bag limit.

There are benefits associated with the reduction of bycatch, including the reduction of uncertainty concerning total fishing-related mortality, which improves the ability to assess the

status of stocks, to determine the appropriate relevant controls, and to ensure that overfishing levels are not exceeded. It is also important to consider the bycatch of HMS in fisheries that target other species as a source of mortality for HMS and to work with fishery constituents and resource manager partners on an effective bycatch strategy to maintain sustainable fisheries. This strategy may include a combination of management measures in the domestic fishery, and if appropriate, multi-lateral measures recommended by international bodies such as the International Commission for the Conservation of Atlantic Tunas (ICCAT) or coordination with Regional Fishery Management Councils or States. The bycatch in each fishery is summarized annually in the SAFE Report for Atlantic HMS fisheries. The effectiveness of the bycatch reduction measures is evaluated based on this summary.

A number of options are currently employed (*) or available for bycatch reduction in Atlantic HMS fisheries. These include but are not limited to:

Commercial

1. *Gear Modifications (including hook and bait types)
2. *Circle Hooks
3. *Time/Area Closures
4. Performance Standards
5. *Education/Outreach
6. *Effort Reductions (*i.e.*, Limited Access)
7. Full Retention of Catch
8. *Use of De-hooking Devices (mortality reduction only)

Recreational

1. *Use of Circle Hooks (mortality reduction only)
2. Use of De-hooking Devices (mortality reduction only)
3. Full Retention of Catch
4. *Formal Voluntary or Mandatory Catch-and-Release Program for all Fish or Certain Species
5. *Time/Area Closures

There are probably no HMS fisheries in which there is zero bycatch because none of the currently legal fishing gears are perfectly selective for the target species of each fishing operation (with the possible exception of the swordfish/tuna harpoon fishery and speargun fishery). Therefore, to totally eliminate bycatch of all non-target species in Atlantic HMS fisheries would be impractical. The goal then is to minimize the amount of bycatch to the extent practicable and minimize the mortality of species caught as bycatch.

7.1.1 Standardized Reporting of Bycatch

Section 303(a)(11) of the Magnuson-Stevens Act requires that a fishery management plan establish a standardized reporting methodology to assess the amount and type of bycatch occurring in the fishery. In 2004, NMFS published a report entitled *"Evaluating Bycatch: A National Approach to Standardized Bycatch Monitoring Programs,"* which described the current status of, and guidelines for, bycatch monitoring programs (NMFS, 2004a). The data collection and analyses that are used to estimate bycatch in a fishery constitute the "standardized bycatch reporting methodology" (SBRM) for that fishery (NMFS, 2004a). Appendix 5 of the report specifies the protocols for SBRMs established by NMFS throughout the country.

As part of the Agency's National Bycatch Strategy, NMFS established a National Working Group on Bycatch (NWGB) to develop a national approach to standardized bycatch reporting methodologies and monitoring programs. This work is to be the basis for regional teams, established in the National Bycatch Strategy, to make fishery-specific recommendations.

NMFS utilizes self-reported logbook data (Fisheries Logbook System or FLS, and the supplemental discard report form in the reef fish/snapper-grouper/king and Spanish mackerel/shark logbook program), at-sea observer data, and survey data (recreational fishery dockside intercept and telephone surveys) to produce bycatch estimates in HMS fisheries. These data are collected with respect to fishing gear type (see Section 7.1.1). The number and location of discarded fish are recorded, as is the disposition of the fish (*i.e.*, released alive vs. released dead). Post-release mortality of HMS can be accounted for in stock assessments to the extent that the data allow.

The fishery logbook systems in place are mandatory programs, and it is expected that the reporting rates are generally high (Garrison, 2005). Due to the management focus on HMS fisheries, there has been close monitoring of reporting rates, and observed trips can be directly linked to reported effort. In general, the gear characteristics and amount of observed effort is consistent with reported effort. However, under-reporting is possible, which can lead to a negative bias in bycatch estimates. Cramer (2000) compared dead discards of undersized swordfish, sailfish, white and blue marlin, and pelagic sharks from HMS logbook and Pelagic Observer Program (POP) data in the U.S. Atlantic pelagic longline fishery. Cramer (2000) provided the ratio of catch estimated from the POP data divided by the reported catch in the HMS logbooks. The ratio indicated the amount of underreporting for each species in a given area. However, the data analyzed by Cramer (2000), was based on J-hook data from 1997 – 1999 and that gear is prohibited now. In some instances, logbooks are used to provide effort information against which bycatch rates obtained from observers is multiplied to estimate bycatch. In other sectors/fisheries, self-reporting provides the primary method of reporting bycatch because of limited funding, priorities, etc.

The following section provides a review of the bycatch reporting methodologies for all HMS fisheries currently in place. Future adjustments may be implemented based on evaluation of the results of studies developed as part of the HMS Bycatch Reduction Implementation Plan, or as needed due to changing conditions in the fisheries. Further analyses of bycatch in the various HMS fisheries may be conducted as time, resources and priorities allow.

7.1.1.1 U.S. Atlantic Pelagic Longline (PLL) Fishery

NMFS utilizes both self-reported data (mandatory logbooks for all vessels) and observer data to monitor bycatch in the pelagic longline fishery. The observer program has been in place since 1992 to document finfish bycatch, characterize fishery behavior, and quantify interactions with protected species (Beerkircher *et al.*, 2002). The observer program is mandatory for those vessels selected and all vessels with directed and incidental swordfish permits are selected. The program had a target coverage level of five percent of the U.S. fleet within the North Atlantic (waters north of 5^{o} N. latitude), as was agreed to by the United States at ICCAT. Actual coverage levels achieved from 1992 – 2003 ranged from two to nine percent depending on quarter and year (Table 7.1) Observer coverage was 100 percent for vessels participating in the Northeast Distant Waters (NED) experimental fishery during 2001 – 2003. Overall observer coverage in 2003 was 11.5 percent of the total sets made, including the NED experiment. The program began requiring an eight percent coverage rate due to the requirements of the 2004 Biological Opinion (BiOp) for Atlantic Pelagic Longline Fishery for HMS. Observer coverage in 2005-2008 ranged from 7.5 – 13.6 percent. NMFS has attempted to attain one hundred percent observer coverage in the Gulf of Mexico during April through June for 2007-2009 to monitor bluefin tuna interactions. Since 1992, data collection priorities have been to collect catch and effort data of the U.S. Atlantic pelagic longline fleet on highly migratory fish species, although information is also collected on bycatch of protected species. Due to increased observer coverage in the Mid-Atlantic Bight as mandated by the Pelagic longline Take reduction Team (PLTRT) final rule, percent observer coverage in this fishery is expected to increase.

Fishery observer effort is allocated among eleven large geographic areas and calendar quarter based upon the historical fishing range of the fleet (Walsh and Garrison, 2006). The target annual coverage is eight percent of the total reported sets, and observer coverage is randomly allocated based upon reported fishing effort during the previous fishing year/quarter/statistical reporting area (Beerkircher *et al.*, 2002). Bycatch rates of protected species (catch per 1,000 hooks) are quantified based upon observer data by year, fishing area, and quarter (Garrison, 2005). The estimated bycatch rate is then multiplied by the fishing effort (number of hooks) in each area and quarter reported to the Fishery Logbook System (FLS) program to obtain estimates of total interactions for each species of marine mammal and sea turtle (Garrison, 2005).

Purse Seine Fishery

Vessels operating in the bluefin tuna purse seine fishery submit either Vessel Trip Reports (VTRs) (NMFS Northeast) or HMS logbooks (NMFS Southeast) based on the type of Federal permits they hold in addition to their HMS permit. Observers were placed on purse seine vessels operating in this fishery in 1996 and 2001 in order to monitor groundfish bycatch in closed areas in the Northwest Atlantic (B. McHale, pers. comm., 2005). The purse seine fishery was observed to have very little bycatch of groundfish or other species of fish and no protected species interactions. As a result, observer coverage has not been used recently to document bycatch or validate logbook reports. In addition, the lack of effort in recent years has not warranted consideration for additional observer coverage.

Shark Bottom Longline Fishery

Vessels participating in the bottom longline fishery for sharks are required to submit snapper/grouper/reef fish/shark logbooks to report their catch and effort, including bycatch species. All vessels having Shark Limited Access Permits are required to report. Observers have monitored the shark bottom longline fishery since 1994. The program has been mandatory for vessels selected to carry observers beginning in 2002. Prior to that, it was a voluntary program relying on cooperating vessels/captains to take observers. From 2002 – 2005, the objective of the vessel selection was to achieve a representative five percent level of coverage of the total fishing effort in each fishing area (North Atlantic, South Atlantic, and Gulf of Mexico) and during each fishing season of that year (Smith *et al*., 2006). Since 2006, target coverage level has been 3.9 percent of the total fishing effort. This level is estimated to attain a sample size needed to provide estimates of sea turtle, smalltooth sawfish, or marine mammal interactions with an expected coefficient of variance (CV) of 0.3 (Carlson, unpubl., as cited in Smith *et al*., 2006)

Effective August 1, 2001, selected federal permit holders that report on the Gulf of Mexico reef fish, South Atlantic snapper-grouper, king and Spanish mackerel, and shark fisheries logbook must report all species and quantities of discarded (alive and dead) sea turtles, marine mammals, birds, and finfish on a supplemental discard form. A randomly selected sample of 20 percent of the vessels with active permits in the above fisheries is selected each year. The selection process is stratified across geographic area (Gulf of Mexico and South Atlantic), gear (handline, longline, troll, gillnet, and trap), and number of fishing trips (ten or less trips and more than 11 trips). Shark fishermen can also use the pelagic longline logbook or the northeast vessel trip reports depending on the permits held by the vessel. If they use either the PLL logbook or VTR, they need to report all of the catch and effort, as well as all the bycatch or incidental catch.

The Final Rule for Amendment 2 to the Consolidated Highly Migratory Species (HMS) Fishery Management Plan (FMP) (73 FR 35778, June 24, 2008, corrected at 73 FR 40658, July 15, 2008) established, among other things, a shark research fishery to maintain time series data for stock assessments and to meet NMFS' 2009 research objectives. The shark research fishery permits authorize participation in the shark research fishery and the collection of sandbar and non-sandbar large coastal sharks (LCS) from federal waters in the Atlantic Ocean, Gulf of Mexico, and Caribbean Sea for the purposes of scientific data collection subject to 100 percent observer coverage. The commercial vessels selected to participate in the shark research fishery are the only vessels authorized to land/harvest sandbars subject to the sandbar quota available for each year. The base quota is 87.9 mt dw/year through December 31, 2012, although this number may be reduced in the event of overharvests, if any, and 116.6 mt dw/year starting on January 1, 2013. The selected vessels would also have access to the non-sandbar LCS, small coastal shark (SCS), and pelagic shark quotas. Commercial vessels not participating in the shark research fishery may only land non-sandbar LCS, SCS, and pelagic sharks subject to the retention limits and quotas per 50 CFR 635.24 and 635.27, respectively.

Shark Gillnet Fishery

Vessels participating in the gillnet fishery for sharks are required to submit logbooks to report their catch and effort, including bycatch species. An observer program for the directed shark gillnet fishery has been in place from 1993 – 1995 and from 1998 to the present. The objectives of this program are to obtain estimates of catch and bycatch and bycatch mortality rates of protected species, juvenile sharks, and other fish species. Catch and bycatch estimates are produced to meet the mandates of the Atlantic Large Whale Take Reduction Plan and the May 2008 Biological Opinion. During right whale calving season (15 November to 15 April), 100 percent observer coverage is required for shark gillnet vessels operating from West Palm Beach, Florida, to Sebastian Inlet, Florida. Outside right whale calving season, observer coverage is equal to that which would obtain a sample size needed to provide estimates of sea turtle or marine mammal interactions with an expected CV of 0.3 (in 2003, this was 33.8 percent of the total trips) (Carlson and Baremore, 2002).

Starting in 2005, a pilot observer program was begun to include all vessels that have an active directed shark permit and fish with sink gillnet gear (Carlson and Bethea, 2006). These vessels were not previously subject to observer coverage because they were either targeting non-highly migratory species or were not fishing gillnets in a drift or strike fashion. These vessels were selected for observer coverage in an effort to determine their impact on finetooth shark landings and their overall impact on shark resources when not targeting sharks.

Commercial Handgear Fishery

The commercial handgear fishery includes vessels using handline, harpoon, rod and reel, or bandit gear to fish for HMS. NMFS has the authority to use observers to collect bycatch information from commercial vessels fishing for tunas. Many of these vessels are already required to complete Federal and/or state logbooks (*e.g.*, the NMFS Northeast Region VTR), in which they are required to report all fishing information, including that for HMS and bycatch. NMFS is currently evaluating various alternatives to increase fishery data collection of vessels fishing for HMS with handgear, such as selecting additional HMS permitted vessels to report in logbooks or to be selected for observer coverage, and is investigating alternatives for electronic reporting. Therefore, no estimates of bycatch are available at this time. Bycatch and bycatch mortality are considered to be low due to the nature of the gear but this should be validated in the future.

Recreational Handgear Fishery

NMFS collects recreational catch-and-release data from dockside surveys (the Large Pelagics Survey and the Marine Recreational Fishery Statistics Survey) for the rod and reel fishery and uses these data to estimate total landings and discards of bycatch or incidental catch. Statistical problems associated with small sample size remain an obstacle to estimating bycatch reliably in the rod and reel fishery. CVs can be high for many HMS (rare event species in the marine recreational Fishing Statistical Survey (MRFSS)) and the Large Pelagic Survey (LPS) does not cover all times/geographic areas for non-bluefin tuna species. New survey methodologies are being developed, however, especially for the Charter/Headboat sector of the rod and reel fishery, which should help to address some of the problems in estimating bycatch

for this fishery. In addition, selecting recreational vessels for voluntary logbook reporting may be an option for collecting bycatch information for this sector of the HMS fishery.

NMFS has the authority to use observers to collect bycatch information from vessels with HMS Charter/Headboat or Angling category permits. Many of the charter/headboat vessels are required to complete Federal and/or state logbooks (*e.g.*, the NMFS Northeast Region VTR), in which they are required to report all fishing information, including that for HMS and bycatch. NMFS is currently evaluating various alternatives to increase logbook coverage of vessels fishing for HMS, such as selecting additional HMS vessels to report in logbooks or be selected for observer coverage, and is investigating alternatives for electronic reporting.

The National Academy of Sciences assembled a committee to review current marine recreational fishing surveys at the request of NMFS (NAS, 2006). The committee was tasked with developing recommendations for improvements to current surveys and to recommend the implementation of possible alternative approaches. The committee's final report was published in April 2006, and NMFS is in the process of evaluating the recommendations. At the present time, no other alternative approach is available. Further information can be found in Section 4.4.

7.2 Bycatch Reduction in HMS Fisheries

The NMFS HMS bycatch reduction program includes an evaluation of current data collection programs, implementation of bycatch reduction measures such as gear modifications and time/area closures (Table 7.1), and continued support of data collection and research relating to bycatch. Additional details on bycatch and bycatch reduction measures can be found in Section 3.5 of the FMP for Atlantic Tunas, Swordfish and Sharks (NMFS, 1999), Regulatory Amendment 1 to the 1999 FMP (NMFS, 2000), Regulatory Adjustment 2 to the 1999 FMP (NMFS, 2002), Amendment 1 to the 1999 FMP (NMFS, 2003a), and in the Consolidated HMS FMP (NMFS, 2006). In addition, an HMS Bycatch Reduction Implementation Plan was developed in late 2003, which identified priority issues to be addressed in the following areas: 1) monitoring; 2) research; 3) management; and 4) education/outreach. Individual activities in each of these areas were identified and new activities may be added or removed as they are addressed or identified.

7.2.1 Evaluation and Monitoring of Bycatch

The identification of bycatch in Atlantic HMS fisheries is the first step in reducing bycatch and bycatch mortality. The Magnuson-Stevens Act requires the amount and type of bycatch to be summarized in the annual SAFE reports. Bycatch reporting methods are addressed in Section 7.1.1. A summary of bycatch species, data collection methods, and management measures by fishery/gear type is found in Table 7.1.

Pelagic longline dead discards of swordfish, billfish, large coastal sharks, and pelagic sharks are estimated using data from NMFS observer reports and pelagic logbook reports. Shark bottom longline and shark gillnet discards can be estimated using logbook data and observer reports as well. Shark gillnet discards have also been estimated using logbook data when observer coverage is equal to 100 percent.

NMFS has not estimated bycatch in the swordfish harpoon fishery. NMFS has limited historical observer data on harpooned swordfish from driftnet trips in which harpoons were sometimes used. Swordfish harpoon fishermen are required to submit pelagic logbooks and NMFS can examine those for their utility in estimating bycatch. NMFS has not estimated bycatch in the bluefin tuna harpoon fishery because these fishermen have not been selected to submit logbooks. NMFS has not estimated bycatch in the General category commercial rod and reel tuna fishery although anecdotal evidence indicates that some undersized bluefin tuna may be captured.

There is concern about the accuracy of discard estimates in the recreational rod and reel fishery for Atlantic HMS due to the low number of observations by the LPS and the MRFSS. Recreational bycatch estimates (numbers of fish released alive and dead) are not currently available, except for bluefin tuna. For some species, encounters are considered rare events, which might result in bycatch estimates with considerable uncertainty. Due to improvements in survey methodology, increased numbers of intercepts (interviews with fishermen) have been collected since 2002. NMFS intends to develop bycatch estimates (live and dead discards) and estimates of uncertainty from the recreational fishery from the LPS. These data will be included in future SAFE Reports. Bycatch estimates may also be examined by using tournament data for the recreational fishery.

Table 7.1 Summary of bycatch species in HMS fisheries, Marine Mammal Protection Act (MMPA) category, endangered Species Act (ESA) requirements, data collection, and management measures by fishery/gear type. (Excerpted from HMS Bycatch Priorities and Implementation Plan and updated through September 2008)

Fishery/Gear Type	Bycatch Species	MMPA Category	ESA Requirements	Bycatch Data Collection	Management Measures
Pelagic Longline	Bluefin tuna Billfish Undersize target species Marine mammals Sea turtles Seabirds Non-target finfish Prohibited shark species Large Coastal Shark species after closure	Category I	Jeopardy findings in 2000 & 2004; Reasonable and Prudent Alternative implemented 2001-04; ITS, Terms & Conditions, RPMs	Permit requirement (1985); logbook requirement (SWO-1985; SHK - 1993); observer requirement (1992), EFPs (2001-present)	BFT target catch requirements (1981); quotas (SWO - 1985; SHK - 1993); prohibit possession of billfish (1988); minimum size (1995); gear marking (1999); line clippers, dipnets (2000); MAB closure (1999); limited access (1999); limit the length of mainline (1996-1997 only); move 1 nm after an interaction (1999); voluntary vessel operator workshops (1999); GOM closure (2000); FL, Charleston Bump, NED closures (2001); gangion length, corrodible hooks, de-hooking devices, handling & release guidelines (2001); NED experiment (2001-03); VMS (2003); circle hooks and bait requirements (2004); mandatory safe handling and release workshops (2006); sea turtle control device (2008); closed area research (2008)
Shark Bottom Longline	Prohibited shark species Target species after closure Sea turtles Smalltooth sawfish Non-target finfish	Category III	ITS, Terms & Conditions, RPMs	Permit requirement (1993); logbook requirement (1993); observer coverage (1994)	Quotas (1993); trip limit (1994); gear marking (1999); handling & release guidelines (2001); line clippers, dipnets, corrodible hooks, de-hooking devices, move 1 nm after an interaction (2004); South Atlantic closure, VMS (2005); shark identification workshops for dealers (2007); sea turtle control device (2008); shark research fishery (2008)
Shark Gillnet	Prohibited shark species Sea turtles Marine mammals Non-target finfish Smalltooth sawfish	Category II	ITS, Terms & Conditions, RPMs	Permit requirement (1993); logbook requirement (1993); observer coverage (1994)	Quotas (1993); trip limit (1994); gear marking (1999); deployment restrictions (1999); 30-day closure for leatherbacks (2001); handling & release guidelines (2001); net checks (2002); whale sighting (2002); VMS (2004); closure for right whale mortality (2006); shark identification workshops for dealers (2007)
BFT Purse Seine	Undersize target species	Category III	ITS, Terms & Conditions	Permit requirement (1982); observer	Quotas (1975); limited access, individual vessel quotas (1982); minimum size (1982)

Fishery/Gear Type	Bycatch Species	MMPA Category	ESA Requirements	Bycatch Data Collection	Management Measures
	Non-target finfish			requirement (1996, 2001 only); EFPs (2002-03)	
BFT & SWO Harpoon	Undersize target species	Category III	ITS, Terms & Conditions	Permit requirement (BFT - 1982; SWO - 1987); SWO logbook requirement (1987)	Quotas (BFT - 1982; SW0 - 1985); minimum size (BFT - 1982; SWO - 1985)
Handgear - Commercial	Undersize target species Non-target finfish	Category III	ITS, Terms & Conditions	Permit requirement (BFT - 1982; SWO 1987; SHK - 1993); logbook requirement (SWO - 1985; SHK - 1993)	Regulations vary by species, including quotas, minimum sizes, retention limits, landing form
Handgear - Recreational	Undersize target species Non-target finfish	Category III	ITS, Terms & Conditions	Large Pelagic Survey (1992); MRFSS (1981)	Regulations vary by species, including minimum sizes, retention limits, landing form; BFT quotas

7.2.2 Bycatch Mortality

The reduction of bycatch mortality is an important component of NS 9. Physical injuries may not be apparent to the fisherman who is quickly releasing a fish because there may be injuries associated with the stress of being hooked or caught in a net. Little is known about the mortality rates of many of the species managed under this FMP, but there are some data for certain species. Information on bycatch mortality of these fish should continue to be collected, and in the future, could be used to estimate bycatch mortality in stock assessments.

NMFS submits annual data (Task II) to ICCAT on mortality estimates (dead discards). These data are included in the SAFE reports and National Reports to ICCAT to evaluate bycatch trends in HMS fisheries.

Pelagic Longline Fishery

NMFS collects data on the disposition (released alive or dead) of bycatch species from logbooks submitted by fishermen in the pelagic longline fishery. Observer reports also include disposition of the catch as well as information on hook location, trailing gear, and injury status of protected species interactions. These data are used to estimate post-release mortality of sea turtles and marine mammals based on guidelines for each (Angliss and DeMaster 1998, Ryder *et al*. 2006). See Section 7.4 for estimates of sea turtle and marine mammal bycatch estimates.

Purse Seine Fishery

NMFS has limited observer data on the bluefin tuna purse seine fishery. There are no recorded instances of non-tuna finfish, other than minimal numbers of blue sharks, caught in tuna purse seines. Anecdotal evidence indicates that if fish are discarded, they are easily released out of the net with minimal bycatch mortality.

Bottom Longline Fishery

The shark bottom longline fishery has relatively low observed bycatch rates. Historically, finfish bycatch has averaged approximately five percent in the bottom longline fishery. Observed protected species bycatch (sea turtles) has typically been much lower, less than 0.01 percent of the total observed catch. Disposition of discards is recorded by observers and can be used to estimate discard mortality.

Shark Gillnet Fishery

During 2008, the shark gillnet fishery, for the 68 observed shark directed sets, exhibited a 22.2 percent bycatch of finfish and a 0 percent catch of protected species (sea turtles and marine mammals). Disposition of discards is recorded by observers and can be used to estimate discard mortality.

Commercial Handgear Fishery

Vessels targeting bluefin tuna with harpoon gear have not been selected for observer coverage since the deliberate fishing nature of the gear is such that bycatch is expected to be low. Therefore, there are no recorded instances of non-target finfish caught with harpoons and NMFS cannot quantify the bycatch of undersized bluefin tuna in this fishery. Bycatch in the swordfish harpoon fishery is virtually, if not totally, non-existent. Since bycatch approaches zero in this fishery, it follows that bycatch mortality is near zero. Disposition of bycatch reported in logbooks is used to estimate mortality of bycatch in the hook and line handgear fisheries.

Recreational Handgear Fishery

The LPS collects data on disposition of bycatch (released alive or dead) in recreational HMS fisheries. Rod and reel discard estimates from Virginia to Maine during June through October can be monitored through the expansion of survey data derived from the LPS (dockside and telephone surveys). However, the actual numbers of fish discarded for many species are low.

Post-release mortality studies have been conducted on few HMS at this time. Immediate mortality in recreational hook and line-caught juvenile bluefin tuna can be high (29.2 percent) due to injuries or predation (Belle, 1997). This is thought to be a conservative estimate because scientific personnel in the study were professionally trained and had extensive experience in fish handling techniques designed to reduce mortality. Mortality often occurs ten minutes or longer after the fish is released under normal circumstances. Injuries may not be readily apparent to the angler and seemingly minor capture injuries may be related to substantial internal injuries. Forty percent of sampled tuna that died during that study did not have injuries that would be apparent to the angler in the boat. Skomal and Chase (1996) provided evidence that the stress of rod and reel angling did not cause immediate post-release mortality in larger bluefin tuna (50 to 150 kg). However, they documented metabolic and pH disturbances in bluefin tuna sampled off Cape Hatteras, North Carolina. The physiological consequences of angling stress are poorly understood for several species of large pelagic fishes (Skomal and Chase, 1996).

A study by Graves *et al.* (2002), investigated short-term (five days) post-release mortality of Atlantic blue marlin using pop-up satellite tag technology. A total of nine recreationally-caught blue marlin were tagged and released during July and August of 1999. All hooks employed in the study were "J" hooks. The attached tags were programmed to detach from the fish after five days and to record direct temperature and inclination of the buoyant tag to determine if the fish were actively swimming after being released. After detachment, the tags floated to the surface and began transmitting recorded position, temperature and inclination data to satellites of the Argos™ system. Three different lines of evidence provided by the tags (movement, water temperature, and tag inclination) suggested that at least eight of the nine blue marlin survived for five days after being tagged and released. One of the tags did not transmit any data which precluded the derivation of a conclusion regarding the tagged marlin's survival.

The study was continued in 2003 to evaluate post release survival and habitat use of white marlin using pop-up satellite archival tags (PSATs) caught and released from four

locations in the western North Atlantic recreational fishery (Horodysky and Graves, 2005). Forty-one tags were attached to white marlin caught using dead baits rigged on straight shank ("J") hooks (n = 21) or circle hooks (n = 20) offshore of the U.S. Mid-Atlantic, the Dominican Republic, Mexico, and Venezuela. Survival was significantly higher ($p<0.01$) for white marlin caught on circle hooks (100 percent) relative to those caught on straight-shank ("J") hooks (65 percent). These results, along with previous studies on circle hook performance, suggest that a change in hook type can significantly increase the survival of white marlin released from recreational fishing gear. Data from these short term deployments also suggest that white marlin strongly associate with warm, near surface waters. However, based on the frequency, persistence, and patterns of vertical movements, white marlin appear to direct a considerable proportion of foraging effort well below surface waters, a behavior that may account for relatively high catch rates of white marlin on some pelagic longline sets. NMFS continues to support studies on recreational post-release mortality and intends to account for this source of mortality when additional information becomes available.

7.3 Code of Angling Ethics

NMFS developed a Code of Angling Ethics as part of implementing Executive Order 12962 – Recreational Fisheries. NMFS implemented a national plan to support, develop, and implement programs that were designed to enhance public awareness and understanding of marine conservation issues relevant to the wellbeing of fishery resources in the context of marine recreational fishing. This code is consistent with National Standard 9, Minimizing Bycatch and Bycatch Mortality, and is reproduced below. These guidelines are discretionary, not mandatory, and are intended to inform the angling public of NMFS' views regarding what constitutes appropriate angling behavior. Part of the code covers catch-and-release fishing and is directed towards minimizing bycatch mortality.

Code of Angling Ethics

- Promotes, through education and practice, ethical behavior in the use of aquatic resources.
- Values and respects the aquatic environment and all living things in it.
- Avoids spilling, and never dumps any pollutants, such as gasoline and oil, into the aquatic environment.
- Disposes of all trash, including worn-out lines, leaders, and hooks, in appropriate containers, and helps to keep fishing sites litter-free.
- Takes all precautionary measures necessary to prevent the spread of exotic plants and animals, including live baitfish, into non-native habitats.
- Learns and obeys angling and boating regulations, and treats other anglers, boaters, and property owners with courtesy and respect.
- Respects property rights, and never trespasses on private lands or waters.
- Keeps no more fish than needed for consumption, and never wastefully discards fish that are retained.

- Practices conservation by carefully handling and releasing alive all fish that are unwanted or prohibited by regulation, as well as other animals that may become hooked or entangled accidentally.
- Uses tackle and techniques, which minimize harm to fish when engaging in "catch-and-release" angling.

7.4 Interactions of HMS Fishing Gears with Protected Species

This section examines the interaction between protected species and Atlantic HMS fisheries managed under this FMP. As a point of clarification, interactions are different than bycatch. Interactions take place between fishing gears and marine mammals, and seabirds; while bycatch consists of the incidental take and discards of non-targeted finfish, shellfish, mollusks, crustaceans, sea turtles, and any other marine life other than marine mammals and seabirds. Following a brief review of the three acts (Marine Mammal Protection Act, Endangered Species Act, and Migratory Bird Treaty Act) affecting protected species, the interactions between HMS gears and each species is examined. Additionally, the interaction of seabirds and longline fisheries are considered under the auspices of the United States "National Plan of Action for Reducing the Incidental Catch of Seabirds in Longline Fisheries" (NPOA – Seabirds).

7.4.1 Interactions and the Marine Mammal Protection Act (MMPA)

The Marine Mammal Protection Act of 1972 as amended is one of the principal Federal statutes guiding marine mammal species protection and conservation policy. In the 1994 amendments, section 118 established the goal that the incidental mortality or serious injury of marine mammals occurring during the course of commercial fishing operations be reduced to insignificant levels approaching a zero mortality rate goal (ZMRG) and serious injury rate within seven years of enactment (*i.e*,. April 30, 2001). In addition, the amendments established a three-part strategy to govern interactions between marine mammals and commercial fishing operations. These include the preparation of marine mammal stock assessment reports, a registration and marine mammal mortality monitoring program for certain commercial fisheries (Category I and II), and the preparation and implementation of take reduction plans (TRP).

NMFS relies on both fishery-dependent and fishery-independent data to produce stock assessments for marine mammals in the Atlantic Ocean, Gulf of Mexico, and Caribbean Sea. Draft stock assessment reports are typically published around January and final reports are typically published in the fall. Final 2008 stock assessment reports can be obtained on the web at: http://www.nmfs.noaa.gov/pr/sars/species.htm while draft 2009 stock assessment reports are available at: http://www.nmfs.noaa.gov/pr/sars/draft.htm.

The following marine mammal species occur off the Atlantic and Gulf Coasts that are, or could be of concern with respect to potential interactions with HMS fisheries.

Common Name	**Scientific Name**
Atlantic spotted dolphin	Stenella frontalis
Blue whale	*Balaenoptera musculus*
Bottlenose dolphin	*Tursiops truncatus*

Common dolphin	*Delphinis delphis*
Fin whale	*Balaenoptera physalus*
Harbor porpoise	*Phocoena phocoena*
Humpback whale	*Megaptera novaeangliae*
Killer whale	*Orcinus orca*
Long-finned pilot whale	*Globicephela melas*
Minke whale	*Balaenoptera acutorostrata*
Northern bottlenose whale	*Hyperoodon ampullatus*
Northern right whale	*Eubalaena glacialis*
Pantropical spotted dolphin	*Stenella attenuata*
Pygmy sperm whale	*Kogia breviceps*
Risso's dolphin	*Grampus griseus*
Sei whale	*Balaenoptera borealis*
Short-beaked spinner dolphin	*Stenella clymene*
Short-finned pilot whale	*Globicephela macrorhynchus*
Sperm whale	*Physeter macrocephalus*
Spinner dolphin	*Stenella longirostris*
Striped dolphin	*Stenella coeruleoalba*
White-sided dolphin	*Lagenorhynchus acutus*

Under MMPA requirements, NMFS produces an annual List of Fisheries (LOF) that classifies domestic commercial fisheries, by gear type, relative to their rates of incidental mortality or serious injury of marine mammals. The LOF includes three classifications:

1. Category I fisheries are those with frequent serious injury or mortality to marine mammals;
2. Category II fisheries are those with occasional serious injury or mortality; and
3. Category III fisheries are those with remote likelihood of serious injury or mortality to marine mammals.

The final 2009 MMPA LOF was published on November 16, 2009 (74 FR 58859). The Atlantic Ocean, Caribbean, and Gulf of Mexico large pelagic longline fishery is classified as Category I (frequent serious injuries and mortalities incidental to commercial fishing) and the southeastern Atlantic shark gillnet fishery is classified as Category II (occasional serious injuries and mortalities). The following Atlantic HMS fisheries are classified as Category III (remote likelihood or no known serious injuries or mortalities): Atlantic tuna purse seine; Gulf of Maine and Mid-Atlantic tuna, shark and swordfish, hook-and-line/harpoon; southeastern Mid-Atlantic and Gulf of Mexico shark bottom longline; and Mid-Atlantic, southeastern Atlantic, and Gulf of Mexico pelagic hook-and-line/harpoon fisheries. Commercial passenger fishing vessel (charter/headboat) fisheries are subject to Section 118 and are listed as a Category III fishery. Recreational vessels are not categorized since they are not considered commercial fishing vessels. Beginning with the 2009 LOF, high seas fisheries are included in the LOF. Many fisheries operate in both U.S. waters and on the high seas thereby making the high seas component an extension of a fishery already on the LOF. NMFS categorizes the majority of high seas fisheries on the LOF as Category II based on the lack of marine mammal stock

abundance information from the high seas. Exceptions to this are high seas fisheries that also operate in U.S. waters that have already been categorized as I, II, or III. For additional information on the fisheries categories and how fisheries are classified, see http://www.nmfs.noaa.gov/pr/interactions/lof/.

Fishermen participating in Category I or II fisheries are required to register under the MMPA and to accommodate an observer aboard their vessels if requested. Vessel owners or operators, or fishermen, in Category I, II, or III fisheries must report all incidental mortalities and serious injuries of marine mammals during the course of commercial fishing operations to NMFS. There are currently no regulations requiring recreational fishermen to report takes, nor are they authorized to have incidental takes (*i.e.*, they are illegal).

NMFS continues to investigate serious injuries to marine mammals as they are released from fishing gear. In April 1999, NMFS held a joint meeting of the three regional scientific review groups to further discuss the issue. NMFS is continuing to develop marine mammal serious injury guidelines and until these are published, NMFS will apply the criteria listed by the review groups to make determinations for specific fisheries. The current BioOps for Atlantic HMS fisheries have resulted in a conclusion of no jeopardy for marine mammals. The 1999 HMS FMP implemented several of the recommendations of the Atlantic Offshore Cetacean Take Reduction Team (AOCTRT) including: 1) a requirement that vessels fishing for HMS move one nautical mile (nm) after an entanglement with protected species; 2) limiting the length of the mainline to 24 nm in the Mid-Atlantic Bight (MAB) from August 1, 1999 through November 30, 2000; 3) voluntary vessel operator education workshops for HMS pelagic longline vessels; 4) handling and release guidelines; and 5) limited access for swordfish, shark and tuna longline permits.

More recently, a Pelagic Longline Take Reduction Team (PLTRT) was formed which replaced the disbanded AOCTRT. The PLTRT developed a draft Take Reduction Plan (TRP) and was published along with a proposed rule to implement it on June 24, 2008 (73 FR35623). The final TRP was published on May 19, 2009 (74 FR 23349). The TRP implemented a suite of management strategies to reduce mortality and serious injury of pilot whales and Risso's dolphins in the Atlantic pelagic longline fishery. NMFS finalized the following three regulatory measures: (1) establish a Cape Hatteras Special Research Area (CHSRA), with specific observer and research participation requirements for fishermen operating in that area; (2) set a 20–nm (37.02–km) upper limit on mainline length for all pelagic longline sets within the MAB; and (3) require an informational placard on handling and release of marine mammals be displayed both in the wheelhouse and on the working deck of all active pelagic longline vessels in the Atlantic fishery. NMFS also finalized the following non-regulatory measures: (1) increased observer coverage in the MAB to 12-15 percent to ensure representative sampling of pilot whales and Risso's dolphins; (2) encourage vessel operators to maintain daily communication with other local vessel operators regarding protected species interactions throughout the PLL fishery with the goal of identifying and exchanging information relevant to avoiding protected species bycatch; (3) recommending that NMFS update the guidelines for handling and releasing marine mammals and NMFS and the industry to develop new technologies, equipment, and methods for safer and more effective handling and release of marine mammals; and (4) recommending NMFS pursue research and data collection goals in the PLTRT regarding pilot whales and

Risso's dolphins. More information on the PLTRT can be found at http://www.nmfs.noaa.gov/pr/interactions/trt/pl-trt.htm. A summary of the observed and estimated marine mammal interactions with the pelagic longline fishery is presented in Table 7.2.

Many of the marine mammals that are hooked by U.S. pelagic longline fishermen are released alive, although some animals suffer serious injuries and may die after being released. The observed and estimated marine mammal interactions for 1999 – 2008 are summarized in Table 7.2. Marine mammals are caught primarily during the third and fourth quarters in the MAB and Northeast Coastal (NEC) areas (Figure 7.1). In 2008, the majority of observed interactions were with pilot whales in the MAB area (Garrison e*t al*., 2009). There were a total of 23 observed interactions with marine mammals in the pelagic longline fishery in 2008. During 2008, the pelagic longline fishery was estimated to have interacted with 142 pilot whales, 65 Risso's dolphins, 35 unidentified marine mammals, seven bottlenose dolphin, six beaked whales, four killer whales, three Atlantic spotted dolphins, three unidentified dolphins and two sperm whales (Garrison *et al*., 2009). NMFS monitors observed interactions with sea turtles and marine mammals on a quarterly basis and reviews data for appropriate action, if any, as necessary.

Table 7.2 Summary of Marine Mammal Interactions in the Pelagic Longline Fishery, 1999-2008. Sources: Yeung, 2001; Garrison, 2003b; Garrison and Richards, 2004; Garrison, 2005; Walsh and Garrison, 2006; Fairfield-Walsh and Garrison, 2007; Fairfield and Garrison, 2008.

Year	Species	Total		Mortality		Serious Injury		Alive	
		Obs	Est	Obs	Est	Obs	Est	Obs	Est
1999	Risso's dolphin	1	23	-	-	1	23	-	-
	Unidentified marine mammal	1	4	-	-	-	-	1	14
	Pilot whale	5	385	1	94	4	291	-	-
2000	Common dolphin	1	32	-	-	-	-	1	32
	Risso's dolphin	3	93	1	41	1	23	1	29
	Pilot whale	8	231	1	24	4	109	3	98
	Whale	1	19	-	-	1	19	-	-
	Pygmy sperm whale	1	28	-	-	1	28	-	-
2001	Risso's dolphin	8	83.6	1	24.4	6	48.9	1	14.3
	Pilot whale	6	92.9	1	19.8	4	50.2	1	22.7
	Striped dolphin	1	1	-	-	-	-	1	1
	Northern bottlenose whale	1	1	-	-	1	1	-	-
2002	Risso's dolphin	10	87.2	-	-	4	11	6	59.6
	Pilot whale	10	113.5	-	-	4	49.9	6	67.8
	Common dolphin	1	1	-	-	-	-	1	1
	Unidentified dolphin	2	2	-	-	1	1	1	1
	Unidentified marine mammal	1	1	-	-	1	1	-	-
2003	Beaked whale	2	48.8	-	-	1	5.3	1	43.5
	Dolphin	1	16.2	-	-	1	16.2	-	-

Year	Species	Total		Mortality		Serious Injury		Alive	
		Obs	Est	Obs	Est	Obs	Est	Obs	Est
	Atlantic spotted dolphin	1	29.8	-	-	1	29.8	-	-
	Bottlenose dolphin	1	2	-	-	-	-	1	2
	Common dolphin	2	45.6	-	-	-	-	2	45.6
	Risso's dolphin	14	109.5	1	1	3	40.1	10	68.4
	Striped dolphin	1	1	-	-	-	-	1	1
	Pilot whale	4	32.1	-	-	2	21.4	1	11.3
	Baleen whale	1	1	-	-	-	-	1	1
	Minke whale	1	22.3	-	-	-	-	1	22.3
2004	Pilot whale	8	107.5	-	-	6	74.1	2	33.8
	Common dolphin	1	6.8	-	-	-	-	1	6.8
	Risso's dolphin	3	49.4	-	-	2	27.5	1	21.9
2005	Pilot whale	18	294.4	-	-	9	211.5	9	79.5
	Risso's dolphin	2	42.1	-	-	-	2.9	2	39.2
	Common dolphin		5.7	-	-	-	-	-	5.7
	Bottlenose dolphin	1	5.2	-	-	-	-	1	5.2
	Beaked whale		1	-	-	-	1	-	-
	Atlantic spotted dolphin	1	4.3	-	-	-	-	1	4.3
	Unidentified marine mammal	1	13.2	-	-	1	13.2	-	-
	Unidentified whale		3.4	-	-	-	3.4	-	-
	Unidentified dolphin	1	2.6	-	-	-	-	1	2.6
2006	Atlantic spotted dolphin		1.9	-	-	-	-	-	1.9
	Beaked whale		2.2	-	-	-	-	-	2.2
	Bottlenose dolphin		0.6	-	-	-	-	-	0.6
	Pilot whale	20	274.5	1	15.5	12	168.6	7	90.4
	Unidentified dolphin	2	26.5	-	-	2	26.5	-	-
	Unidentified marine mammal	1	12.6	1	12.6	-	-	-	-
2007	Atlantic spotted dolphin		1.4	-	-	-	-	-	1.4
	Bottlenose dolphin	2	12.6	-	-	1	-	1	12.6
	Beaked whale	1	1.5	-	-	-	-	1	1.5
	Pilot whale	8	86.6	-	-	5	56.7	3	30.7
	Risso's dolphin	2	20.3	-	-	1	9.3	1	11.0
	Unidentified dolphin	2	3.8	1	1.5	-	-	1	2.3
	Unidentified marine mammal	2	22.1	-	-	2	22.1	-	-
2008	Atlantic spotted dolphin		3.1						3.1
	Bottlenose dolphin	1	6.6	-	-	-	-	1	6.6
	Beaked whale	1	6.1	-	-	-	-	1	6.1
	Killer whale	1	3.4	-	-	-	-	1	3.4
	Pilot whale	8	141.5	-	-	5	98.2	3	43.3
	Risso's dolphin	9	64.4	1	4.4	4	20.4	4	39.6
	Sperm whale	1	1.6	-	-	-	-	1	1.6
	Unidentified dolphin		3.2						3.2
	Unidentified marine mammal	2	34.7	-	-	1	20.4	1	14.3

7.4.2 Interactions and the Endangered Species Act (ESA)

The Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.), provides for the conservation and recovery of endangered and threatened species of fish, wildlife, and plants. The listing of a species is based on the status of the species throughout its range or in a specific portion of its range in some instances. Threatened species are those likely to become endangered in the foreseeable future [16 U.S.C. §1532(20)] if no action is taken to stop the decline of the species. Endangered species are those in danger of becoming extinct throughout all or a significant portion of their range [16 U.S.C. §1532(20)]. Species can be listed as endangered without first being listed as threatened. The Secretary of Commerce, acting through NMFS, is authorized to list marine and anadromous fish species, marine mammals (except for walrus and sea otter), marine reptiles (such as sea turtles), and marine plants. The Secretary of the Interior, acting through the U.S. Fish and Wildlife Service (USFWS), is authorized to list walrus and sea otter, seabirds, terrestrial plants and wildlife, and freshwater fish and plant species.

In addition to listing species under the ESA, the service agency (NMFS or USFWS) generally must designate critical habitat for listed species concurrently with the listing decision to the "maximum extent prudent and determinable" [16 U.S.C. §1533(a)(3)]. The ESA defines critical habitat as those specific areas that are occupied by the species at the time it is listed that are essential to the conservation of a listed species and that may be in need of special consideration, as well as those specific areas that are not occupied by the species that are essential to their conservation. Federal agencies are prohibited from undertaking actions that are likely to destroy or adversely modify designated critical habitat.

Marine Mammals	**Status**
Blue whale *(Balaenoptera musculus)*	Endangered
Fin whale *(Balaenoptera physalus)*	Endangered
Humpback whale *(Megaptera novaeangliae)*	Endangered
Northern right whale *(Eubalaena glacialis)*	Endangered
Sei whale *(Balaenoptera borealis)*	Endangered
Sperm whale *(Physeter macrocephalus)*	Endangered
Sea Turtles	
Green turtle *(Chelonia mydas)*	*Endangered/Threatened
Hawksbill sea turtle *(Eretmochelys imbricata)*	Endangered
Kemp's ridley sea turtle *(Lepidochelys kempii)*	Endangered
Leatherback sea turtle *(Dermochelys coriacea)*	Endangered
Loggerhead sea turtle *(Caretta caretta)*	Threatened
Olive ridley sea turtle *(Lepidochelys olivacea)*	Threatened
Critical Habitat	
Northern right whale	Endangered
Finfish	
Smalltooth sawfish *(Pristis pectinata)*	Endangered

*Green sea turtles in U.S. waters are listed as threatened except for the Florida breeding population, which is listed as endangered. Due to the inability to distinguish between the populations away from the nesting beaches, green sea turtles are considered endangered wherever they occur in U.S. waters.

7.4.2.1 Sea Turtles

NMFS has taken several steps in the past few years to reduce sea turtle bycatch and bycatch mortality in domestic longline fisheries. On March 30, 2001, NMFS implemented via interim final rule requirements for U.S. flagged vessels with pelagic longline gear on board to have line clippers and dipnets to remove gear on incidentally captured sea turtles (66 FR 17370). Specific handling and release guidelines designed to minimize injury to sea turtles were also implemented. NMFS published a final report which provides the detailed guidelines and protocols (Epperly *et al*., 2004) and a copy can be found at http://www.nmfs.noaa.gov/sfa/hms/Protected%20Resources/TM_524.pdf

A BiOp completed on June 14, 2001, found that the actions of the pelagic longline fishery jeopardized the continued existence of loggerhead and leatherback sea turtles. This document reported that the pelagic longline fishery interacted with an estimated 991 loggerhead and 1,012 leatherback sea turtles in 1999. The estimated take levels for 2000 were 1,256 loggerhead and 769 leatherback sea turtles (Yeung 2001). The BiOp provided RPAs and an Incidental take statement (ITS) for the continued operation of the fishery.

On July 13, 2001 (66 FR 36711), NMFS published an emergency rule that closed the NED area to pelagic longline fishing (effective July 15, 2001), modified how pelagic longline gear may be deployed effective August 1, 2001, and required that all longline vessels (pelagic and bottom) post safe handling guidelines for sea turtles in the wheelhouse. On December 13, 2001 (66 FR 64378), NMFS extended the emergency rule for 180 days through July 8, 2002. On July 9, 2002, NMFS published a final rule (67 FR 45393) that closed the NED to pelagic longline fishing. As part of theRPA, the BiOp required NMFS to conduct an experiment with commercial fishing vessels to test fishery-specific gear modifications to reduce sea turtle bycatch and mortality. This rule also required the length of any gangions to be 10 percent longer than the length of any floatline on vessels where the length of both is less than 100 meters; prohibited stainless steel hooks; and required gillnet vessel operators and observers to report any whale sightings, and required gillnets to be checked every 0.5 to 2 hours.

The experimental program required in the BiOp was initiated in the NED area in 2001 in cooperation with the U.S. pelagic longline fleet that historically fished on the Grand Banks fishing grounds. The goal of the experiment was to test and develop gear modifications that might prove useful in reducing the incidental catch and post-release mortality of sea turtles captured by pelagic longline gear while striving to minimize the loss of target catch. The three year experimental fishery utilized 100 percent observer coverage to assess the effectiveness of the measures. The gear modifications tested in 2001 included blue-dyed squid and moving gangions away from floatlines. In 2002, the NED experimental fishery examined the effectiveness of whole mackerel bait, squid bait, circle and "J" hooks, and reduced daylight soak time in reducing the capture of sea turtles. The experiment tested various hook and bait type combinations in 2003 to verify the results of the 2002 experiment.

On November 28, 2003, based on the conclusion of the three-year NED experiment, and preliminary data that indicated that the Atlantic pelagic longline fishery may have exceeded the ITS issued pursuant to the June 2001, BiOp, NMFS published a Notice of Intent to prepare an Suplemental Environmental Impact statement (SEIS) to assess the potential effects on the human

environment of proposed alternatives and actions under a proposed rule to reduce sea turtle bycatch (68 FR 66783). NMFS reinitiated consultation and a new BiOp for the Atlantic pelagic longline fishery was completed on June 1, 2004. The BiOp concluded that long-term continued operation of the Atlantic pelagic longline fishery, authorized under the 1999 FMP, was not likely to jeopardize the continued existence of loggerhead, green, hawksbill, Kemp's ridley, or olive ridley sea turtles; and was likely to jeopardize the continued existence of leatherback sea turtles.

On July 6, 2004, NMFS implemented additional regulations for the Atlantic pelagic longline fishery to further reduce the mortality of incidentally caught sea turtles (69 FR 40734). These measures include requirements on hook type, hook size, bait type, dipnets, lineclippers, and safe handling guidelines for the release of incidentally caught sea turtles. These requirements were developed based on the results of the 2001 – 2003 NED experiment (Watson *et al*., 2003; Watson *et al*., 2004; Shah *et al*., 2004). These requirements are predicted to decrease the number of total interactions, as well as the number of mortalities, of both leatherback and loggerhead sea turtles (Table 7.3) (NMFS, 2004c). Post-release mortality rates are expected to decline due to a decrease in the number of turtles that swallow hooks which engage in the gut or throat, a decrease in the number of turtles that are foul-hooked, and improved handling and gear removal protocols. NMFS is working to export this new technology to pelagic longline fleets of other nations to reduce global sea turtle bycatch and bycatch mortality. U.S gear experts have presented this bycatch reduction technology and data from research activities at approximately 15 international events that included fishing communities and resource managers between 2002 and mid-2005 (NMFS, 2005). NMFS published a final rule to require the possession and use of an additional sea turtle control device as an addition to the existing requirements for sea turtle bycatch mitigation gear in the pelagic and bottom longline fisheries effective on October 23, 2008 ((73 FR 54721).

Internationally, the United States is pursuing sea turtle conservation through international, regional, and bilateral organizations such as ICCAT, the Asia Pacific Fisheries Commission, and the Food and Agriculture Organization (FAO) Committee on Fisheries (COFI). The United States intends to provide a summary report to FAO for distribution to its members on bycatch of sea turtles in U.S. longline fisheries and the research findings as well as recommendations to address the issue. At the 24th session of COFI held in 2001, the United States distributed a concept paper for an international technical experts meeting to evaluate existing information on turtle bycatch, to facilitate and standardize collection of data, to exchange information on research, and to identify and consider solutions to reduce turtle bycatch. COFI agreed that an international technical meeting could be useful despite the lack of agreement on the specific scope of that meeting. The United States has developed a prospectus for a technical workshop to address sea turtle bycatch in longline fisheries as a first step. Other gear-specific international workshops may be considered in the future.

Historically, sea turtle interactions with pelagic longline gear have occurred throughout the range of the fishery. However, the majority of leatherback interactions have occurred in the Gulf of Mexico while most loggerhead interactions occur in the offshore Atlantic Ocean areas like the NED and NEC (Figure 7.1) Most of the sea turtles are released alive. In the past, the bycatch rates were highest in the third and fourth quarters. In general, sea turtle captures are rare, but takes appear to be clustered (Hoey and Moore, 1999).

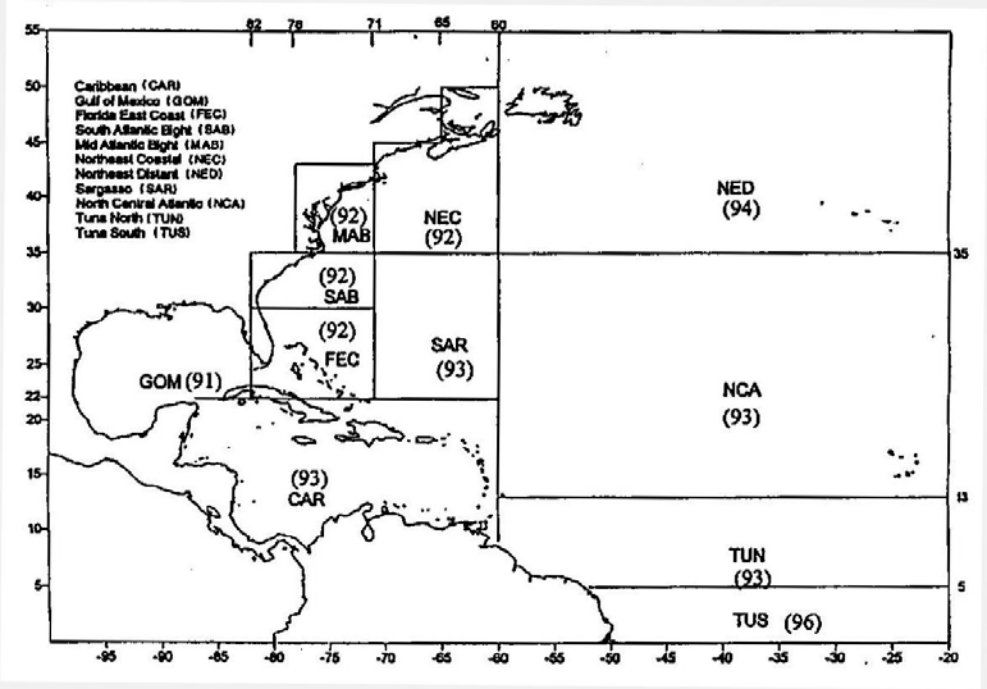

Figure 7.1 Geographic Areas Used in Summaries of Pelagic Logbook Data. Source: Cramer and Adams, 2000

The estimated take levels for 2000 were 1,256 loggerhead and 769 leatherback sea turtles (Yeung, 2001). The estimated sea turtle takes for regular fishing and experimental fishing effort for 2001 - 2008 are summarized in Table 7.3. The majority of leatherback interactions have occurred in the Gulf of Mexico. Loggerhead interactions are more widely distributed, however, the NED, and the NEC appear to be areas with high interaction levels each year.

The pelagic longline fishery interacted with an estimated 381 leatherback sea turtles and 772 loggerhead sea turtles outside of experimental fishing operations in 2008. The majority of loggerhead sea turtle interactions occurred in the NED, and the NEC areas (352 and 237 animals, respectively) (Table 7.3). The interactions with leatherback sea turtles were highest in the Gulf of Mexico and the NEC (144 and 140 animals, respectively (Table 7.4) (Garrison *et al*., 2009). NMFS monitors observed interactions with sea turtles and marine mammals on a quarterly basis and reviews data for appropriate action, if any, as necessary.

Table 7.3 Estimated number of loggerhead sea turtle interactions in the U.S. Atlantic pelagic longline fishery, 2001-2008 by statistical area. Sources: Walsh and Garrison, 2006; Garrison, 2005; Garrison and Richards, 2004; Garrison 2003; Fairfield-Walsh and Garrison, 2007; Fairfield and Garrison, 2008; Garrison et al., 2009.

Area	2001	2002	2003	2004	2005	2006	2007	2008
CAR	27	43	36	61	40	16	7	17
GOM	0	170	135	45	19	17	10	10
FEC	0	99	137	99	0	40	83	47
SAB	39	22	52	194	34	18	34	70
MAB	43	94	18	92	54	70	155	20
NEC	117	147	241	150	67	135	48	237
NED	72	0	0	52	20	235	200	352
SAR	0	0	70	41	38	19	4	16
NCA	13	0	39	0	3	10	2	1
TUN	0	0	0	0	0	0	0	0
TUS	0	0	0	0	0	0	0	0
Total	312	575	728	734	275	559	543	770
NED exp'tal fishery (2001-03)	142	100	92	-	-	-	-	-
Exp'tal fishery (2004-05)	-	-	-	0	8	0	0	1
Total	454	675	820	734	283	559	543	771

Table 7.4 Estimated number of leatherback sea turtle interactions in the U.S. Atlantic pelagic longline fishery, 2001-2008 by statistical area. Sources: Walsh and Garrison, 2006; Garrison, 2005; Garrison and Richards, 2004; Garrison 2003; Fairfield-Walsh and Garrison, 2007; Fairfield and Garrison, 2008; Garrison et al, 2009.

Area	2001	2002	2003	2004	2005	2006	2007	2008
CAR	61	0	0	17	2	4	1	2
GOM	393	695	838	780	179	109	212	144
FEC	313	100	27	64	62	28	7	30
SAB	241	93	75	164	7	39	0	0
MAB	139	70	94	184	11	30	114	43
NEC	30	5	76	33	6	73	76	140
NED	32	0	0	98	63	116	84	0
SAR	0	0	0	18	20	14	5	14
NCA	1	0	2	0	0	1	0	0
TUN	0	0	0	0	0	0	0	8
TUS	0	0	0	0	0	0	0	0
Total	1208	962	1113	1359	351	415	499	381
NED exp'tal fishery (2001-03)	77	158	79	-	-	-	-	-
Exp'tal fishery (2004-05)	-	-	-	3	17	-	-	4
Total	1285	1120	1192	1362	368	415	499	385

As a result of the increased sea turtle interactions in 2001 and 2002, NMFS reinitiated consultation for the pelagic longline fishery and completed a new BiOp on June 1, 2004. The June 2004 BiOp concluded that long-term continued operation of the Atlantic pelagic longline fishery was not likely to jeopardize the continued existence of loggerhead, green, hawksbill, Kemp's ridley, or olive ridley sea turtles, but was likely to jeopardize the continued existence of leatherback sea turtles. The BiOp included an RPA and an ITS for 2004 – 2006 combined, and for each subsequent three-year period (NMFS, 2004b).

From 2001 through 2003, NMFS worked with the commercial fishing industry to develop new pelagic longline fishing technology to reduce interaction rates and bycatch mortality of threatened and endangered sea turtles. The cooperative gear technology research investigated line configurations, setting and retrieving procedures, hook types, hook sizes, bait types, and release and disentanglement gears. Ultimately, specific hook designs and bait types were found to be the most effective measures for reducing sea turtle interactions. Large circle hooks and mackerel baits were found to substantially reduce sea turtle interactions over the use of the industry standard "J"-hooks and squid baits. The gears developed to remove hooks and line from hooked and entangled sea turtles are anticipated to reduce post-hooking mortality associated with those interactions not avoided. Since the conclusion of the NED research experiment, NMFS has continued to investigate pelagic longline bycatch mitigation techniques in the Gulf of Mexico,

Atlantic Ocean, and the Caribbean Sea. Additionally, NMFS held a series of voluntary workshops for U.S. pelagic longline fishermen providing outreach and training in sea turtle handling and release techniques.

NMFS believes that the transfer of this information to other fishing countries will result in significant reductions in interaction rates and post-release mortalities of threatened and endangered sea turtles throughout their ranges. A final rule published in July 2004 (69 FR 40734) prohibited the possession of "J"-style hooks in the pelagic longline fishery and required the possession and use of specific sea turtle release and disentanglement gears, handling and release protocols, as well as requiring the use of specific circle hooks and baits. The Agency conducts mandatory protected species identification and safe handling workshops for vessel owner-operators and requires proof of certification prior to permit renewal.

7.4.2.2 Smalltooth sawfish

On April 1, 2003, NMFS listed smalltooth sawfish as an endangered species (68 FR 15674) under the ESA. After reviewing the best available scientific and commercial information, the status review team determined that the U.S. Distinct Population Segment (DPS) of smalltooth sawfish is in danger of extinction throughout all or a significant portion of its range from a combination of the following four listing factors: 1) the present or threatened destruction, modification, or curtailment of habitat or range; 2) overutilization for commercial, recreational, scientific, or educational purposes; 3) inadequacy of existing regulatory mechanisms; and 4) other natural or manmade factors affecting its continued existence. NMFS is working on designating critical habitat for smalltooth sawfish.

NMFS believes that smalltooth sawfish takes in the shark gillnet fishery are rare given the low reported number of takes and high rate of observer coverage. The fact that there were no smalltooth sawfish caught during 2001, when 100 percent of the fishing effort was observed, indicates that smalltooth sawfish takes (observed or total) most likely do not occur on an annual basis. Based on this information, the 2003 BiOp estimated that one incidental capture of a sawfish (released alive) over five years, would occur as a result of the use of gillnets in this fishery (NMFS, 2003a). No smalltooth sawfish were observed in shark gillnet fisheries for 2007-08.

For vessels targeting sharks in the Gulf of Mexico in 2008, two smalltooth sawfish were observed caught in bottom longline gear and both were released alive. Smalltooth sawfish have been observed caught (eight known interactions, seven released alive, one released in unknown condition) in shark bottom longline fisheries from 1994 through 2004 (NMFS, 2003a). Based on these observations, expanded sawfish take estimates for 1994-2002 were developed for the shark bottom longline fishery (NMFS, 2003a). A total of 466 sawfish were estimated to have been taken in this fishery during 1994 - 2002, resulting in an average of 52 per year. All were released alive except one. Estimates of sawfish bycatch for 2003-06 have been developed and range from 0 to 161 interactions per year (Richards, 2007a; 2007b). However, due to the sparseness of observations (interactions) and effort variables chosen for the various approaches to estimating total interactions, the results were not very precise. A small bottom longline time-area closure to protect smalltooth sawfish southwest of Key West, Florida, was considered during the development of the Consolidated HMS FMP (NMFS, 2006). The closure was not

implemented due to the lack of information regarding critical habitat for this species and a proposed rule to designate critical habitat for smalltooth sawfish published on November 20, 2008 (73 FR 70290).

7.4.2.3 Interactions with Seabirds

Observer data indicate that seabird bycatch is relatively low in the U.S. Atlantic pelagic longline fishery (Table 7.5) (NMFS, 2009). Since 1992, a total of 142 seabird interactions have been observed, with 101 observed killed (71.6 percent). In 2007, there were 121 active U.S. pelagic longline vessels fishing for swordfish in the Atlantic Ocean, Gulf of Mexico, and Caribbean Sea that reportedly set approximately 6.1 million hooks. A total of one seabird was observed taken, a brown pelican which was released alive. Extrapolated estimates of seabird bycatch have varied substantially since 1992, ranging from 0 in 1996 to a high of 1,109 in 1997 (Table 7.8). The average extrapolated estimate of seabird bycatch was 210 per year while the extrapolated estimate of dead seabird bycatch was 150 per year, ranging from 0 to 623 (Table 7.9). Live discards ranged from zero to 486 per year, averaging 60 per year. Estimates of dead discards of seabirds ranged from zero to 623 per year, averaging 150 per year. The annual bycatch rate of birds discarded dead ranged from zero to 0.015 birds per 1,000 hooks, while the rate of total seabird catch ranged from zero to 0.106 birds per 1,000 hooks.

The NPOA-Seabirds was released in February 2001. The NPOA for Seabirds calls for detailed assessments of longline fisheries, and, if a problem is found to exist within a longline fishery, for measures to reduce seabird bycatch within two years. NMFS, in collaboration with the appropriate Councils and in consultation with the USFWS, will prepare an annual report on the status of seabird mortality for each longline fishery. The United States is committed to pursuing international cooperation, through the Department of State, NMFS, and USFWS, to advocate the development of NPOAs within relevant international fora. NMFS intends to meet with longline fishery participants and other members of the public in the future to discuss possibilities for complying with the intent of the plan of action. Because interactions appear to be relatively low in Atlantic HMS fisheries, the adoption of immediate measures is unlikely.

Gannets, gulls, greater shearwaters, and storm petrels are occasionally hooked by Atlantic pelagic longlines. These species and all other seabirds are protected under the Migratory Bird Treaty Act. Seabird populations are often slow to recover from excess mortality as a consequence of their low reproductive potential (one egg per year and late sexual maturation). The majority of longline interactions with seabirds occur as the gear is being set. The birds eat the bait and become hooked on the line. The line then sinks and the birds are subsequently drowned.

Bycatch of seabirds in the shark bottom longline fishery has been virtually non-existent. A single pelican has been observed killed from 1994 through 2008. No expanded estimates of seabird bycatch or catch rates for the bottom longline fishery have been made due to the rarity of seabird takes.

Table 7.5 Seabird Bycatch in the U.S. Atlantic Pelagic Longline Fishery, 1999-2008.
Source: NMFS, 2008; NMFS PLL fishery observer program (POP) data.

Year	Month [1]	Area	Type of Bird	Number observed	Status
1999	6	SAB	Seabird	1	dead
2000	6	SAB	Gull laughing	1	alive
2000	11	NEC	Gannet northern	1	dead
2001	6	NEC	Shearwater greater	7	dead
2001	7	NEC	Shearwater greater	1	dead
2002	7	NEC	Seabird	1	dead
2002	8	NED	Shearwater greater	1	dead
2002	8	NED	Seabird	1	dead
2002	9	NED	Shearwater greater	3	dead
2002	9	NED	Seabird	3	alive
2002	9	NED	Shearwater spp	1	dead
2002	10	NED	Gannet northern	1	alive
2002	10	NED	Shearwater spp	1	dead
2002	10	NED	Seabird	2	dead
2002	10	MAB	Gull	3	alive
2002	10	MAB	Gull	1	dead
2002	11	MAB	Gull	3	dead
2003	1	GOM	Seabird	1	alive
2003	8	NED	Seabird	1	dead
2003	9	MAB	Seabird	1	dead
2004	1	MAB	Gull	5	dead
2004	3	MAB	Shearwater greater	1	alive
2004	3	MAB	Shearwater greater	4	dead
2004	4	NED	Seabird	1	dead
2005	1	SAB	Gull herring	1	dead
2005	1	SAB	Shearwater spp	1	dead
2005	3 [2]	NEC	Shearwater greater	1	alive
2005	3 [2]	NEC	Shearwater greater	1	dead
2006	4	MAB	Shearwater greater	1	dead
2006	4	NEC	Shearwater spp	1	alive
2006	4	NED	Shearwater greater	1	dead
2007	1	MAB	Gull blackbacked	6	dead
2008	2	GOM	Pelican brown	1	alive

[1] Beginning in 2004, reports based on Quarters not month.
[2] Experimental fishery takes.

Table 7.6 Status of Seabird Bycatch in the U.S. Atlantic Pelagic Longline Fishery, 1992-2008. Source: NMFS Pelagic longline fishery observer program (POP).

Species	Release Status		Total	Percent Dead
	Dead	Alive		
Greater shearwater	25	3	28	89.29
Cory's shearwater	1		1	100.00
Unidentified shearwater	2	1	3	66.67
Herring gull	8	-	8	100.00
Great black-backed gull	9	1	10	90.00
Laughing gull	1	1	2	50.00
Unidentified gull	14	8	22	63.64
Northern gannet	1	7	8	12.50
Storm petrel	1		1	100.00
Unidentified seabird	39	19	58	67.24
Brown pelican	1	0	1	0.0
Grand Total	102	40	142	71.63

Table 7.7 Observed seabird bycatch in the U.S. Atlantic pelagic longline fishery, 1992-2008 (excluding the NED experiment of 2001-03). Source: NMFS, 2009.

			Number of seabirds		Catch rate	
Year	Sets	Hooks	All	Dead	Per set	Per 1000 hooks
1992	329	194,706	6	6	0.018	0.031
1993	817	526,501	9	3	0.011	0.017
1994	650	411,996	15	15	0.023	0.036
1995	686	472,105	10	7	0.015	0.021
1996	356	220,223	0	0	0	0
1997	451	311,520	33	18	0.073	0.106
1998	287	175,408	8	8	0.028	0.046
1999	424	285,083	1	1	0.002	0.004
2000	465	312,574	2	1	0.004	0.006
2001	398	284,198	8	8	0.02	0.028
2002	344	260,632	8	2	0.023	0.031
2003	551	427,575	2	1	0.004	0.005
2004	702	524,182	11	10	0.016	0.021
2005	796	577,354	4	3	0.005	0.007
2006	568	419,233	3	2	0.005	0.007
2007	944	734,110	6	6	0.006	0.008
2008	1,291	922,557	1	0	0.001	0.001
Total	10,059	7,129,957	127	91	0.013	0.018

Table 7.8 Expanded estimates of seabird bycatch (alive and dead) in the U.S. Atlantic pelagic longline fishery, 1992-2007. Source: NMFS, 2008.

Taxa	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	Avg.
Gulls	160	84	199	24	-	-	-	-	22	-	248	-	77	8	-	54	55
Gannets	-	83	-	48	-	-	-	-	22	-	-	-	-	-	-	-	10
Seabirds	-	-	-	140	-	1,109	380	28	-	-	36	39	6	-	-	-	109
Shearwaters	80	-	74	-	-	-	-	-	-	283	-	-	75	31	27	-	36
Storm-petrels	-	-	-	24	-	-	-	-	-	-	-	-	-	-	-	-	2
All	240	167	273	236	0	1,109	380	28	44	283	284	39	158	39	27	54	210

Table 7.9 Expanded estimates of dead seabird bycatch in the U.S. Atlantic pelagic longline fishery, 1992-2007. Source: NMFS, 2008.

Taxa	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	Avg.
Gulls	160	50	199	0	-	-	-	-	0	-	36	-	77	8	-	54	37
Gannets	-	0	-	0	-	-	-	-	22	-	-	-	-	-	-	-	1
Seabirds	-	-	-	140	-	623	380	28	-	-	36	20	6	-	-	-	77
Shearwaters	80	-	74	-	-	-	-	-	-	283	-	-	61	19	16	-	33
Storm-petrels	-	-	-	24	-	-	-	-	-	-	-	-	-	-	-	-	2
All	240	50	273	164	0	623	380	28	22	283	72	20	144	27	16	54	150

7.5 Measures to Address Protected Species Concerns

NMFS has taken a number of actions designed to reduce interactions with protected species over the last few years. Bycatch reduction measures have been implemented through the FMP for Atlantic Tunas, Swordfish and Sharks (NMFS, 1999), in Regulatory Amendment 1 to the 1999 FMP (NMFS, 2000), in Regulatory Adjustment 2 to the 1999 FMP (NMFS, 2002), in Amendment 1 to the 1999 FMP (NMFS, 2003a), and in the June 2004 Final Rule for Reduction of Sea Turtle Bycatch and Bycatch Mortality in the Atlantic Pelagic Longline Fishery (69 FR 40734). NMFS closed the Southeast U.S. Restricted Area to gillnet fisheries from February 15, 2006, to March 31, 2006, as a result of an entanglement and subsequent mortality of a right whale with gillnet gear (71 FR 8223). NMFS continues to monitor observed interactions with marine mammals and sea turtles on a quarterly basis and reviews data for appropriate action, if any, as necessary. A final rule requiring the possession and use of an additional sea turtle control device as an addition to the existing requirements for sea turtle bycatch mitigation gear in pelagic and bottom longline fisheries was effective October 23, 2008 (73 FR 54721). NMFS finalized the PLTRT TRP effective June 18, 2009 (74 FR 23349) which implemented a suite of management strategies to reduce mortality and serious injury of pilot whales and Risso's dolphins in the Atlantic pelagic longline fishery.

Table 7.10 Estimated sea turtle interactions by species in the US Atlantic pelagic longline fishery, 1999-2008, and Incidental Take Levels (ITS).

PLL Fishery	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	3 year ITS, 2004-06/2007-09 Total
Leatherback	1,016	769	1,208	962	1,112	1,362	368	415	500	385	1,981 / 1,764
Loggerhead	994	1,256	312	575	727	733	282	558	542	772	1,869 / 1,905
Other/Unidentified sea turtles	66	128	0	50	38	0	0	11	1	0	35 / 35
Marine mammals	422	403	177	201	300	164	372	313	151	265	NA

7.6 Bycatch of HMS in Other Fisheries

NMFS is concerned about bycatch mortality of Atlantic HMS in any federal or state-managed fishery which captures them. NMFS plans to address bycatch of these species in the appropriate FMPs through coordination with the responsible management body. For example, capture of swordfish and tunas incidental to squid trawl operations is addressed in the Squid, Mackerel, and Butterfish FMP. Capture rates of tunas in coastal gillnet fisheries are being explored through issuance of exempted fishing permits and reporting requirements. NMFS continues to solicit bycatch data on HMS from all state, interjurisdictional, and Federal data collection programs. NMFS supports development of an interstate management plan for coastal sharks by the ASMFC to protect sharks caught incidentally in state-managed fisheries. NMFS

has requested assistance from the Atlantic States Marine Fisheries Commission (ASMFC), the Gulf States Marine Fisheries Commission (GSMFC), and Atlantic and Gulf Regional Fishery Management Councils in identifying potential sources of bycatch of finetooth sharks in state waters fisheries or other fisheries outside the jurisdiction of this FMP.

7.6.1 Squid Mid-Water Trawl

U.S. squid trawl fishermen, using mid-water gear, landed 7.6 mt ww of yellowfin tuna, skipjack tuna, albacore tuna, bigeye tuna, and swordfish in 2008 incidental to the squid, mackerel, and butterfish trawl fishery (Table 7.11). Bycatch of HMS in other trawl fisheries may be included as a portion of the overall reported trawl landings in Table 7.11. Landings decreased from 2007 for all tuna species. Swordfish landings increased but remain at a low level relative to the directed fishery landings. A retention limit of 30 swordfish per trip allows squid trawl fishermen with swordfish limited access permits to land some of the swordfish that are encountered, although regulatory discards still occur.

Table 7.11 Atlantic HMS Landed (mt ww) Incidental to Trawl Fisheries, 1999-2008.
Source: NMFS, 2003; NMFS, 2005; NMFS, 2009.

Species	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Yellowfin tuna	4.1	1.76	2.7	0.3	2.2	1.6	0.2	0.7	2.4	0.0
Skipjack tuna	1.0	<0.05	0.2	<0.05	0.5	0.2	0.07	0.7	<0.01	<0.01
Bigeye tuna	1.2	1.7	0.4	0.5	0.03	0.9	0.6	0.0	0.4	0.0
Albacore	0.4	<0.05	0.0	0.3	0.02	2.7	1.7	1.1	0.3	0.01
Swordfish	7.5	10.9	2.5	3.9	5.6	8.3	8.2	3.5	6.5	7.6
Total	14.2	14.46	5.8	5.0	8.35	13.7	10.77	6.0	9.61	7.61

7.6.2 Menhaden Purse Seine Fishery

In the menhaden purse seine fishery, sharks were caught incidentally in approximately 30 percent of the purse seine sets observed (deSilva *et al.*, 2001). Ten species of sharks were identified with blacktip sharks being the most common species. Approximately 20 percent of the sharks were not identified to species. An estimated 30,000 sharks were taken in this fishery annually in 1994 and 1995. At the time of release, 75 percent of sharks were dead, 12 percent were disoriented, and eight percent were healthy. The odds of observing shark bycatch was highest in April and May. Stomach analyses of sharks suggest that their occurrence in the fishery is probably the result of sharks preying on gulf menhaden (deSilva *et al.*, 2001). No new data are available at this time.

Industry workers in this fishery employ a fish excluder device to reduce the retention of sharks and other large species (Rester and Condrey, 1999). In addition, a recently introduced hose cage modification may prove to be effective in reducing shark bycatch. These devices vary in effectiveness and no standards exist for such bycatch reduction measures in this fishery. In

addition, there are currently no reporting requirements for takes of sharks in the menhaden purse seine fishery. Recent estimates of large coastal sharks discarded in this fishery range from 24,000 – 26,200 individuals (Cortés, 2005).

7.6.3 Shrimp Trawl Fishery

Shark bycatch in the shrimp trawl fishery consists mainly of sharks too small to be highly valued in the commercial market. As a result, few sharks are retained. Bycatch estimates of LCS in this fishery have been generated and were reviewed in the most recent LCS assessment (Table 7.12) (SEDAR 11, 2006). Bycatch estimates of the small coastal shark complex were generated for both the Gulf of Mexico and South Atlantic shrimp trawl fisheries for the most recent SCS stock assessment. Requirements for turtle excluder devices in these fisheries have probably resulted in less bycatch because sharks are physically excluded from entering the gear. Bycatch of the SCS complex in the Gulf of Mexico shrimp trawl fishery consists mainly of Atlantic sharpnose and bonnethead sharks (SEDAR 13, 2007). Finetooth sharks were added as a select species for the shrimp trawl observer program in 2005 to help determine if this fishery has bycatch of finetooth sharks. Prior to this, data on finetooth shark bycatch was not recorded.

Table 7.12 Estimates of bycatch (numbers of fish) of small coastal sharks in the U.S. south Atlantic and Gulf of Mexico shrimp trawl fisheries and bottom longline fishery relative to total catch. Source: SEDAR 13, 2007.

Year	Shrimp Trawl (GOM)	Percent of Total Catch (GOM)	Shrimp Trawl (SA)	Percent of Total Catch (SA)	Bottom Longline Discards	Percent of Total Catch	Total Catch
1992	1172572	81.9	147409	10.3	-	-	1431810
1993	509360	76.4	64034	9.6	-	-	666956
1994	443215	69.3	55718	8.7	-	-	639406
1995	1051681	69.2	132211	8.7	32494	2.1	1520508
1996	920627	71.7	115736	9.0	15627	1.2	1284416
1997	703350	63.2	88421	7.9	9035	0.8	1113361
1998	806300	65.7	101363	8.3	9038	0.7	1228131
1999	641017	59.9	80585	7.5	14379	1.3	1070164
2000	796602	61.9	100144	7.8	22196	1.7	1286476
2001	641786	55	80682	6.9	14365	1.2	1167231
2002	1104353	69.2	138833	8.7	24906	1.6	1595703
2003	544058	59.1	68396	7.4	26518	2.9	919918
2004	797000	67.1	101330	8.5	30165	2.5	1188402
2005	530943	59.9	66893	7.5	29020	3.3	886732

7.6.4 Southeast Gillnet Fishery

7.6.4.1 Gillnet Bycatch

This section describes the non-shark bycatch observed in the southeast shark gillnet fisheries (Passerotti and Carlson, 2009). The shark gillnet fisheries are fished in three different manners: drift, strike, and sink. For more information on the southeast shark gillnet fisheries refer to Section 4.6 of this document.

The most common non-shark species caught in the drift gillnet fishery were bluefish (*Pomatomus saltatrix*) and Spanish mackerel (*Scomberomorus maculatus*). The bycatch observed in the drift gillnet fishery was comprised of 88.2 percent teleosts, 7.1 percent non-shark elasmobranchs (e.g., skates and rays), and 4.7 percent other miscellaneous species (e.g., jellyfish) (Table 7.13).

All of the bycatch observed in the strike gillnet fishery were teleosts. The vast majority of those fish were the same two species seen most commonly in the drift gillnet fishery, only in the reverse order of frequency, with the Spanish mackerel (S. *maculatus*) being slightly more represented in the catch than the bluefish (P. *saltatrix*) (Table 7.14).

There was a much wider range of fish species caught in the sink gillnet fishery than in the either the drift-, or strike-, gillnet fisheries. Again, the most commonly seen species were the Spanish mackerel and bluefish; but there were also significant numbers of blue runner (*Caranx chrysos*) and Atlantic bumper (*Chloroscombrus chrysurus*) seen in the catch as well. For all species, teleosts made up 97.8-percent of the bycatch, while the rest of the bycatch consisted of just fewer than 2 percent non-shark elasmobranchs and less than 1 percent of other miscellaneous species (Table 7.15).

7.6.4.2 Loggerhead Sea Turtles

Loggerhead sea turtles are rarely caught in the shark gillnet fisheries. Between 2000 and 2007, a total of 15 loggerhead sea turtles were observed caught in the shark gillnet fisheries (Table 7.16). Of those 15 turtles, 9 were released alive, 2 were released dead, and 4 were of unknown condition. There were no observed loggerhead sea turtle interactions in 2008 (Passerotti and Carlson, 2009).

7.6.4.3 Leatherback Sea Turtles

Leatherback sea turtles are also rarely caught in the shark gillnet fisheries. From 2000 to 2007, one leatherback sea turtle (released alive) was observed caught (Table 7.17). NMFS temporarily closed the shark gillnet fishery (strikenetting was allowed) from March 9 to April 9, 2001, due to the increased number of leatherback interactions that year (66 FR 15045, March 15, 2001).There were no observed leatherback sea turtle interactions in 2008 (Passerotti and Carlson, 2009).

7.6.4.4 Marine Mammals

Observed takes of marine mammals in the Southeast Atlantic shark gillnet fishery during 1999 – 2007 totaled 12 bottlenose dolphins and 4 spotted dolphins (Garrison, 2007). In 2008

there were no interactions with marine mammals in the shark gillnet fisheries (Passerotti and Carlson, 2009).

On January 22, 2006, a dead right whale was spotted offshore of Jacksonville Beach, Florida. NMFS determined that both the entanglement and death of the whale occurred within the Southeast U.S. Restricted Area, and all available evidence suggested the entanglement and injury of the whale by gillnet gear ultimately led to the death of the animal. As a result of this death, on February 16, 2006, NMFS published a temporary rule (71 FR 8223) to prohibit, through March 31, 2006, any vessel from fishing with any gillnet gear in the Atlantic Ocean waters between 32°00' N. Lat. (near Savannah, GA) and 27°51' N. Lat. (near Sebastian Inlet, Florida) and extending from the shore eastward out to 80°00' W. long under the authority of the Atlantic Large Whale Take Reduction Plan (ALWTRP) (50 CFR 229.32 (g)) and ESA. Additionally, NMFS implemented the final rule on June 25, 2007 (72 FR 34632), that prohibits gillnet fishing, including shark gillnet fishing, from November 15 to April 15, between the North Carolina/South Carolina border and 29° 00' N. The action was taken to prevent the significant risk to the wellbeing of endangered right whales from entanglement in gillnet gear in the core right whale calving area during calving season. Limited exemptions to the fishing prohibitions are provided for gillnet fishing for sharks and for Spanish mackerel south of 29°00' N. lat. Shark gillnet vessels fishing between 29° 00' N and 26° 46.5' N have certain requirements as outlined 50 CFR § 229.32 from December 1 through March 31 of each year. These include vessel operators contacting the NMFS Southeast Fishery Science Center's Panama City Laboratory at least 48 hours prior to departure of a fishing trip in order to arrange for an observer.

In addition, another final rule (October 5, 2007, 72 FR 57104) further extends restrictions in the Southeast U.S. Monitoring Area from December 1 through March 31. In that area no person may fish with or possess gillnet gear for sharks with webbing of 5" or greater stretched mesh unless the operator of the vessel is in compliance with the VMS requirements found in 50 CFR 635.69. The Southeast U.S. Monitoring Area is from 27°51' N. (near Sebastian Inlet, Florida) south to 26°46.5' N. (near West Palm Beach, Florida), extending from the shoreline or exemption line eastward to 80°00' W. In addition, NMFS may select any shark gillnet vessel regulated under the ALWTRP to carry an observer. When selected, the vessels are required to take observers on a mandatory basis in compliance with the requirements for at-sea observer coverage found in 50 CFR 229.7. Any vessel that fails to carry an observer once selected is prohibited from fishing pursuant to 50 CFR § 635. There are additional gear marking requirements that can be found at 50 CFR § 229.32.

7.6.4.5 Smalltooth Sawfish

To date there has been only one observed catch of a smalltooth sawfish in shark gillnet fisheries. The sawfish was taken on June 25, 2003, in a gillnet off the west coast of Florida, cut from the net and released alive with no visible injuries (Carlson and Baremore, 2003). This indicates that smalltooth sawfish can be removed safely if entangled gear is sacrificed. The set was characteristic of a typical drift gillnet set, with gear extending 30 to 40 feet deep in 50 to 60 feet of water. Prior to this event it was speculated that the depth at which drift gillnets are set above the sea floor may preclude smalltooth sawfish from being caught. From 2004-2008, there were no observed catches of smalltooth sawfish in shark gillnet fisheries.

Although sometimes described as a lethargic demersal species, smalltooth sawfish feed mostly on schooling fish, thus they would occur higher in the water column during feeding activity. In fact, smalltooth sawfish and Atlantic sharks may be attracted to the same schools of fish, potentially making smalltooth sawfish quite vulnerable if present in the area fished. The previous absence of smalltooth sawfish incidental capture records is more likely attributed to the relatively low effort in this fishery and the rarity of smalltooth sawfish, especially in federal waters. These factors may result in little overlap of the species with the gear.

Given the high rate of observer coverage in the shark gillnet fishery, NMFS believes that smalltooth sawfish takes in this fishery are very rare. The fact that there were no smalltooth sawfish caught during 2001 when 100 percent of the fishing effort was observed indicates that smalltooth sawfish takes (observed or total) most likely do not occur on an annual basis. Based on this information, the 2008 BiOp permitted one incidental take of smalltooth sawfish (released alive) from 2008 through 2011 as a result of the use of all gillnets in this fishery (NMFS, 2008).

Table 7.13 Total bycatch by species seen in the drift gillnet fishery from the 2008 Observer Data. Source Passerotti and Carlson, 2009.

Common Name	Total Number Caught	Kept (%)	D.A. (%)	D.D. (%)
Bluefish	340	74.1	11.5	14.4
Spanish mackerel	268	93.3	0.0	6.7
Butterfish	59	98.3	0.0	1.7
Clearnose skate	56	0.0	100.0	0.0
Menhaden	39	0.0	7.7	92.3
King mackerel	34	97.1	0.0	2.9
Jellyfishes	34	0.0	100.0	0.0
Atlantic croaker	22	0.0	31.8	68.2
Blue crab	8	0.0	100.0	0.0
Flounders	8	0.0	100.0	0.0
Cobia	7	42.9	28.6	28.6
Stingrays	5	0.0	100.0	0.0
Remora	4	0.0	100.0	0.0
Cownose ray	3	0.0	100.0	0.0
Lookdown	3	0.0	66.7	33.3
Ladyfish	2	0.0	0.0	100.0
Flounders	2	100.0	0.0	0.0
Spadefish	1	0.0	100.0	0.0
Atlantic bonito	1	100.0	0.0	0.0
Red drum	1	0.0	100.0	0.0

Note: Kept (%) – represents the percentage of the catch retained, D.A.(%) – percentage of the catch discarded alive, D.D (%) – percentage of the catch discarded dead

Table 7.14 Total bycatch by species seen in the strike gillnet fishery from the 2008 Observer Data. Source Passerotti and Carlson, 2009.

Common Name	Total Number Caught	Kept (%)	D.A. (%)	D.D. (%)
King mackerel	1821	100.0	0.0	0.0
Bluefish	1729	100.0	0.0	0.0
Spanish mackerel	43	100.0	0.0	0.0
Red grouper	4	25.0	50.0	25.0
Blue Runner	3	100.0	0.0	0.0
Remoras	1	0.0	100.0	0.0
Cobia	1	0.0	100.0	0.0
Atlantic bonito	1	0.0	0.0	100.0

Note: Kept (%) – represents the percentage of the catch retained, D.A.(%) – percentage of the catch discarded alive, D.D (%) – percentage of the catch discarded dead

Table 7.15 Total bycatch by species seen in the sink gillnet fishery from the 2008 Observer Data. Source Passerotti and Carlson, 2009.

Common Name	Total Number Caught	Kept (%)	D.A. (%)	D.D. (%)
Spanish mackerel	5875	98.3	0.0	1.7
Bluefish	1969	97.1	1.2	1.7
Blue runner	1105	99.3	0.0	0.7
Atlantic bumper	1040	86.8	6.6	6.5
Spot	657	87.5	5.9	6.5
Goosefish family	414	76.6	1.2	22.2
Yellowfin menhaden	393	60.8	5.1	34.1
Sand drum	340	0.0	25.0	75.0
Southern kingfish	281	98.2	0.0	1.8
Winter skate	238	50.0	6.3	43.7
Atlantic moonfish	115	59.1	18.3	22.6
King mackerel	115	21.7	2.6	75.7
Atlantic croaker	79	78.5	2.5	19.0
Banded drum	79	16.5	13.9	69.6
Butterfish	57	96.5	3.5	0.0
Flounder family	49	85.7	8.2	6.1
Crevalle jack	34	100.0	0.0	0.0
Florida pompano	25	68.0	32.0	0.0
Cobia	25	28.0	32.0	40.0
Weakfish	25	84.0	0.0	16.0
Horseshoe crab	19	0.0	100.0	0.0
Atlantic cutlassfish	18	94.4	0.0	5.6
Silver perch	18	77.8	0.0	22.2
Gafftopsail catfish	17	0.0	11.8	88.2
Seatrout family	15	93.3	0.0	6.7

Common Name	Total Number Caught	Kept (%)	D.A. (%)	D.D. (%)
Jellyfish family	14	0.0	0.0	100.0
Gulf kingfish	14	100.0	0.0	0.0
Gulf butterfish	12	83.3	0.0	16.7
Menhaden	10	0.0	0.0	100.0
Cownose ray	9	0.0	100.0	0.0
Sea robins	9	0.0	88.9	11.1
Herring	9	0.0	22.2	77.8
Pomfrets	7	0.0	0.0	100.0
Atlantic thread herring	6	16.7	33.3	50.0
Spadefish	6	0.0	16.7	83.3
Unknown teleost eaten/damaged	6	0.0	0.0	100.0
Remoras	6	0.0	100.0	0.0
Lookdown	5	0.0	0.0	100.0
Ladyfish	5	80.0	20.0	0.0
Rays	3	0.0	100.0	0.0
Little tunny	3	100.0	0.0	0.0
Houndfish	2	100.0	0.0	0.0
Inshore lizardfish	2	0.0	0.0	100.0
Swimming crabs	2	0.0	50.0	50.0
Devil ray	2	0.0	50.0	50.0
Spotted eagle ray	2	0.0	100.0	0.0
Atlantic guitarfish	1	0.0	100.0	0.0
Southern flounder	1	100.0	0.0	0.0
Pigfish	1	100.0	0.0	0.0
Bullnose ray	1	0.0	100.0	0.0
Manta ray	1	0.0	100.0	0.0
Silver seatrout	1	0.0	0.0	100.0
Barred grunt	1	0.0	100.0	0.0
Unicorn filefish	1	100.0	0.0	0.0

Note: Kept (%) – represents the percentage of the catch retained, D.A.(%) – percentage of the catch discarded alive, D.D (%) – percentage of the catch discarded dead

Table 7.16 Total number of Observed Interactions with Protected Species from 2000-2008 in the Shark Gillnet Fishery. Source: Directed Shark Gillnet Observer Program. Letters in parentheses indicate whether the animal was released alive (A), dead (D), or unknown (U).

Year	Leatherback Sea Turtle	Loggerhead Sea Turtle	Smalltooth Sawfish	Total
2000		1 (U)		1
2001		1 (U)		1
2002		1 (U)		1
2003			1(A)	1
2004				0
2005	1(A)	5 (4A, 1D)		6
2006		3 (2A, 1D)		3
2007		4 (3A, 1U)		4
2008				0
Total	1	15	1	17

7.7 Effectiveness of Existing Time/Area Closures in Reducing Bycatch

Since 2000, NMFS has implemented a number of time/area closures and gear restrictions in the Atlantic Ocean and Gulf of Mexico for the PLL fishery to reduce discards and bycatch of a number of species (juvenile swordfish, bluefin tuna, billfish, sea turtles, etc.). Preliminary analyses of the effectiveness of these closures are summarized here.

The combined effects of the individual area closures and gear restrictions were examined by comparing the reported catch and discards from 2005-2008 to the averages for 1997-1999 throughout the entire U.S. Atlantic fishery. Previous analyses attempted to examine the effectiveness of the time/area closures only by comparing the 2001-2003 reported catch and discards to the base period (1997-1999) chosen and are included here as well for reference. The percent changes in the reported numbers of fish caught and discarded were compared to the predicted changes from the analyses in Regulatory Amendment 1 to the 1999 FMP (NMFS, 2000). Overall effort, expressed as the number of hooks reported set, declined by 28.6 percent from 1997-1999 (Table 7.17). Declines were noted for both the numbers of kept and discards of almost all species examined including swordfish, tunas, sharks, billfish, and sea turtles. The only positive changes from the base period were the numbers of bluefin tuna and dolphin kept and discarded. The reported number of bluefin tuna kept increased by 40.3 percent for 2005-2008 compared to 1997-1999 (Table 7.17). The number of reported discards of bluefin tuna increased by almost 24 percent between the same time periods, which is more than double the predicted 11 percent increase from the analyses in Regulatory Amendment 1. The number of dolphin kept and discarded increased slightly between time periods, although the absolute number of discards were relatively low (less than one thousand fish) (Table 7.18**).** Billfish (blue and white marlin, sailfish) discards reportedly decreased by 62.5 to 72.6 percent from 1997-1999 to 2005-2008 (Table 7.18). The reported discards of spearfish declined by 25 percent, although the absolute

number of discards was also low (less than 200 fish). The reported number of turtle interactions decreased by 55.5 percent from 1997-1999 to 2005-2008.

The reported declines in swordfish kept and discarded, large coastal sharks kept and discarded, and dolphin kept were similar to the predicted values developed for Regulatory Amendment 1. Reported discards of pelagic sharks, all billfish (with the exception of spearfish for which no predicted change was developed in Regulatory Amendment 1), and total BAYS tunas kept all declined more than the predicted values.

The reported distribution of effort over the same time periods was also examined for changes in fishing behavior **(**Table 7.19**).** Declines in the number of hooks set were noted for almost all areas with the exception of the Sargasso (SAR) area, where reported effort has increased almost eight-fold from the 1997-99 period. However, this effort represents only two percent of the overall effort reported in this fishery. Overall, reported effort decreased by 28.6 percent from 1997-1999 to 2005-2008. Reported effort declined by only eight percent in the MAB area, 18.5 percent in the Gulf of Mexico, and 20 percent in the South Atlantic Bight (SAB). Reported effort declined by 35 percent or more in all other areas with the exception of the SAR. Although reported effort declined by 65.3 percent in the SAT area (Tuna North and Tuna South combined), recent effort has shown an increasing trend.

Concern over the status of bluefin tuna and the effects of the pelagic longline fishery on the species led to a re-examination of a previous analysis which compared the reported catch and discards of select species or species groups from the MAB and NEC to that reported from the rest of the fishing areas (Table 7.20). The number of bluefin tuna discards reported from the MAB/NEC has increased over the last few years while the discards from the other areas has remained relatively constant. The increase in bluefin tuna discards in the MAB/NEC does not appear to be effort-related as the reported number of hooks set has also been relatively stable (MAB) or in decline (NEC).

Table 7.17 Total number of swordfish, bluefin tuna, yellowfin tuna, bigeye tuna, total BAYS (bigeye, albacore, yellowfin and skipjack tuna), reported landed or discarded in the U.S. Atlantic PLL fishery, 1997 – 2008, and percent change from 1997-99. Predicted values from Regulatory Amendment 1 where Pred [1] = without redistribution of effort, Pred [2] = with redistribution of effort**.** Source: HMS Logbook data.

Year	Number of hooks set (x1000)	Swordfish kept	Swordfish discards	Bluefin tuna kept	Bluefin tuna discards	Yellowfin tuna kept	Yellowfin tuna discards	Bigeye tuna kept	Bigeye tuna discards	Total BAYS kept	Total BAYS discards
1997	9,674.5	69,222	20,555	207	706	76,211	1,869	21,985	1,618	105,553	4,264
1998	8,031.3	70,627	23,345	237	1,321	55,507	2,710	19,324	876	82,572	4,018
1999	7,893.6	67,544	20,656	270	604	85,307	2,889	22,615	906	116,306	4,389
2000	8,021.9	63,535	16,706	236	738	73,205	1,772	13,908	348	95,294	2,968
2001	7,742.3	49,236	14,448	183	348	53,751	1,811	18,976	559	82,997	3,806
2002	7,229.6	50,439	13,182	178	593	59,758	1,655	14,056	277	80,749	2,599
2003	7,120.4	52,838	12,089	275	881	51,988	2,015	7,539	348	64,601	2,802
2004	7,325.9	46,950	10,704	476	1,031	64,128	1,736	8,266	486	77,989	3,452
2005	5,922.6	41,239	11,158	376	766	43,833	1,316	8,383	369	57,237	2,545
2006	5,662.0	38,241	8,900	261	833	55,821	1,426	12,491	257	73,058	2,865
2007	6,290.6	45,933	11,823	357	1,345	56,062	1,452	8,913	249	70,390	3,031
2008	6,498.1	48,000	11,194	343	1,417	33,774	1,717	11,254	356	50,108	3,427
Mean											
1997-99	8,533.1	69,131	21,519	238	877	72,342	2,489	21,308	1,133	101,477	4,224
A) 2001-03	7,364.1	50,838	13,240	212	607	55,166	1,827	13,524	395	76,116	3,069
B) 2005-07	6,093.3	43,353	10,769	334	1,090	47,373	1,478	10,260	308	62,698	2,967
% dif (A)	-13.7	-26.5	-38.5	-10.9	-30.7	-23.7	-26.6	-36.5	-65.2	-25.0	-27.3
% dif (B)	-28.6	-37.3	-50.0	40.3	24.3	-34.5	-40.6	-51.8	-72.8	-38.2	-29.8
Pred [1]		-24.6	-41.5		-1.0					-5.2	
Pred [2]		-13.0	-31.4		10.7					10.0	

Table 7.18 Total number of pelagic sharks, large coastal sharks, dolphin (mahi mahi), and wahoo reported landed or discarded and number of billfish (blue and white marlin, sailfish, spearfish) and sea turtles reported caught and discarded in the U.S. Atlantic PLL fishery, 1997 – 2008, and percent change from 1997-99. Predicted values from Regulatory Amendment 1 where Pred [1] = without redistribution of effort, Pred [2] = with redistribution of effort. Source: HMS logbook data.

Year	Pelagic sharks kept	Pelagic shark discards	Large coastal sharks kept	Large coastal shark discards	Dolphin kept	Dolphin discards	Wahoo kept	Wahoo discards	Blue marlin discards	White marlin discards	Sailfish discards	Spearfish discards	Sea turtles
1997	5,110	82,022	13,746	7,869	63,530	1,204	4,787	91	2,309	2,436	1,765	384	267
1998	3,731	45,261	6,458	5,577	23,643	299	5,445	305	1,301	1,511	850	103	890
1999	2,852	28,995	6,375	5,477	31,960	321	5,285	128	1,253	1,971	1,411	151	632
2000	3,068	28,048	7,758	6,727	29,272	294	4,232	48	1,163	1,286	1,106	79	271
2001	3,511	23,954	6,510	4,892	27,914	329	3,084	62	659	874	358	142	421
2002	3,071	23,325	4,077	3,968	30,559	185	4,223	33	1,181	1,449	386	161	467
2003	3,129	21,771	5,332	4,882	29,609	452	4,020	126	606	813	280	114	399
2004	3,460	25,414	2,304	5,144	39,561	295	4,674	35	713	1,060	425	172	370
2005	3,150	21,560	3,365	5,881	25,709	556	3,360	280	569	990	367	155	154
2006	2,098	24,113	1,768	5,326	25,658	1,041	3,608	100	439	557	277	142	128
2007	3,504	27,478	546	7,133	68,124	467	3,073	52	611	744	321	147	300
2008	3,500	28,786	115	6,732	43,511	404	2,571	82	686	669	505	196	476
Mean													
1997-99	3,898	52,093	8,860	6,308	39,711	608	5,172	175	1,621	1,973	1,342	213	596
A) 2001-03	3,237	23,017	5,306	4,581	29,361	322	3,776	74	815	1,045	341	139	429
B) 2005-08	3,063	25,484	1,449	6,268	40,751	617	3,153	129	576	740	368	160	265
% dif (A)	-17.0	-55.8	-40.1	-27.4	-26.1	-47.0	-27.0	-57.8	-49.7	-47.0	-74.6	-34.6	-28.1

Year	Pelagic sharks kept	Pelagic shark discards	Large coastal sharks kept	Large coastal shark discards	Dolphin kept	Dolphin discards	Wahoo kept	Wahoo discards	Blue marlin discards	White marlin discards	Sailfish discards	Spearfish discards	Sea turtles
% dif (B)	-21.4	-51.1	-83.7	-0.6	2.6	1.5	-39.0	-26.3	-64.5	-62.5	-72.6	-24.9	-55.5
Pred [1]	-9.5	-2.0	-32.1	-42.5	-29.3				-12.0	-6.4	-29.6		-1.9
Pred [2]	4.1	8.4	-18.5	-33.3	-17.8				6.5	10.8	-14.0		7.1

Table 7.19 Reported distribution of hooks set by area, 1995-2008, and percent change from 1997-99 (CAR=Caribbean, GOM=Gulf of Mexico, FEC=Florida East Coast, SAB=South Atlantic Bight, MAB=Mid-Atlantic Bight, NEC=Northeast Coastal, NED=Northeast Distant, SAR=Sargasso, NCA=North Central Atlantic, and SAT=Tuna North & Tuna South). Source: HMS logbook data.

Year	CAR	GOM	FEC	SAB	MAB	NEC	NED	SAR	NCA	SAT	Total
1995	688,761	2,662,962	647,060	853,095	2,394,484	1,072,438	765,485	16,430	785,749	298,113	10,184,577
1996	651,673	3,612,577	579,064	1,591,526	1,040,205	1,139,399	589,982	87,285	500,262	601,729	10,393,702
1997	473,536	3,418,396	787,834	948,850	1,209,966	1,231,096	689,494	21,640	209,946	683,755	9,674,513
1998	333,766	3,004,727	669,533	720,675	1,320,946	886,459	506,079	3,500	247,457	338,191	8,031,333
1999	177,028	3,615,770	710,373	769,808	1,271,316	587,225	338,719	17,795	117,031	288,532	7,893,597
2000	259,369	3,682,965	718,463	813,972	1,035,296	610,103	543,699	10,959	224,364	122,684	8,021,874
2001	218,013	3,549,658	470,855	730,926	1,109,990	865,281	315,695	11,437	292,383	178,639	7,742,247
2002	172,962	3,597,953	495,245	435,231	1,022,578	559,771	464,868	104,165	241,621	135,252	7,229,628
2003	134,611	3,900,014	500,413	544,368	702,220	448,438	576,727	112,787	132,205	68,600	7,120,383
2004	298,129	4,118,468	264,524	672,973	856,521	462,171	455,862	128,582	20,990	47,730	7,325,950
2005	180,885	3,037,968	323,551	467,680	835,091	356,696	462,490	110,107	55,716	92,382	5,922,566
2006	73,774	2,577,231	281,239	544,647	1,085,640	406,199	339,586	135,575	64,500	153,620	5,662,011
2007	32,650	2,920,725	347,236	739,272	1,319,056	326,532	285,827	100,336	11,409	207,598	6,290,641
2008	87,190	2,370,231	647,499	849,252	1,423,206	579,244	224,635	147,969	16,148	152,763	6,498,137

Mean											
1997-99	328,110	3,346,298	722,580	813,111	1,267,409	901,593	511,431	14,312	191,478	436,826	8,533,148
A) 2001-03	175,195	3,682,536	488,838	569,965	944,929	624,497	452,430	76,130	222,070	127,497	7,364,086
B) 2005-08	93,625	2,726,539	399,881	650,213	1,165,748	417,168	328,135	123,497	36,943	151,591	6,093,339
% dif (A)	-46.6	10.0	-32.3	-29.9	-25.4	-30.7	-11.5	431.9	16.0	-70.8	-13.7
% dif (B)	-71.5	-18.5	-44.7	-20.0	-8.0	-53.7	-35.8	772.6	-80.7	-65.3	-28.6

Table 7.20 Number of bluefin tuna (BFT), swordfish (SWO), sharks (PEL-pelagic; LCS-Large Coastal Sharks), billfish, and turtles reported kept and/or discarded in the Mid-Atlantic Bight (MAB) and Northeast Coastal (NEC) areas combined versus all other areas as reported in the pelagic logbook data, 1995-2008. Source: HMS logbook Data.

			SPECIES									
Area	**Year**	**Hooks set (x1000)**	**BFT kept**	**BFT discards**	**SWO kept**	**SWO discards**	**PEL shark kept**	**PEL shark discards**	**LCS kept**	**LCS discards**	**Billfish discards**	**Turtle interactions**
MAB & NEC	1995	3,466.9	96	2,791	5,845	5,399	2,683	36,415	7,747	2,125	1,461	81
	1996	2,179.6	74	1,601	3,124	874	2,520	37,743	6,435	2,004	1,184	20
	1997	2,441.1	96	583	6,330	3,663	3,062	40,515	6,670	958	803	52
	1998	2,207.4	94	1,157	9,684	4,923	2,143	28,579	1,781	890	401	57
	1999	1,858.5	70	335	8,213	4,331	1,680	12,479	1,966	736	818	174
	2000	1,645.4	26	356	8,748	2,846	2,099	13,083	4,744	1,407	240	30
	2001	1,975.3	45	200	10,661	4,000	2,537	9,013	4,383	997	310	69
	2002	1,582.3	18	389	10,986	4,219	2,378	7,308	2,331	1,207	311	41
	2003	1,150.7	67	471	10,888	3,022	2,222	6,929	2,787	1,429	172	42
	2004	1,318.7	128	709	8,486	2,463	2,323	7,594	923	1,488	219	54
	2005	1,191.8	96	575	9,184	2,420	1,912	7,026	2,512	2,433	473	44
	2006	1,491.8	124	737	10,278	2,564	1,428	7,547	1,279	2,180	266	28
	2007	1,645.6	137	1,148	14,102	3,082	2,313	8,169	431	2,861	407	55
	2008	2,002.5	143	1,133	13,208	3,199	2,695	9,541	63	1,781	320	100
All Other	1995	6,717.7	156	103	67,191	24,436	3,094	53,937	17,883	6,140	6,176	1,047

			SPECIES									
Area	**Year**	**Hooks set (x1000)**	**BFT kept**	**BFT discards**	**SWO kept**	**SWO discards**	**PEL shark kept**	**PEL shark discards**	**LCS kept**	**LCS discards**	**Billfish discards**	**Turtle interactions**
Areas (non-MAB/NEC)	1996	8,214.1	129	115	70,640	23,506	3,044	47,725	14,469	8,292	6,582	474
	1997	7,233.5	111	123	62,892	16,892	2,048	41,507	7,076	6,911	6,091	215
	1998	5,823.9	143	164	60,943	18,422	1,588	16,682	4,677	4,687	3,364	833
	1999	6,035.1	200	269	59,331	16,325	1,172	16,516	4,409	4,741	3,968	458
	2000	6,376.5	210	382	54,787	13,860	969	14,965	3,014	5,320	3,394	241
	2001	5,767	138	148	38,575	10,448	974	14,941	2,127	3,895	1,723	352
	2002	5,647.3	160	204	39,453	8,963	693	15,160	1,746	2,761	2,866	426
	2003	5,969.7	208	410	41,950	9,067	907	14,842	2,565	3,453	1,641	357
	2004	6,007.3	348	322	38,464	8,241	1,137	17,820	1,381	3,656	2,151	316
	2005	4,730.8	280	191	32,055	8,738	1,238	14,534	853	3,448	1,608	110
	2006	4,170.2	137	96	27,963	6,336	670	16,566	489	3,146	1,149	100
	2007	4,645.1	200	197	31,831	8,741	1,191	19,309	115	4,272	1,416	245
	2008	4,495.7	200	284	29,592	7,995	805	19,245	52	4,951	1,736	376

7.7.1 Prohibition of Live Bait in the Gulf of Mexico

Regulatory Amendment 1 to the 1999 FMP also prohibited the use of live bait on pelagic longline gear in the Gulf of Mexico due to concerns over the incidental bycatch of billfish. Based on logbook data, the number of hooks reported set with live bait or a combination of live and dead bait in the Gulf of Mexico decreased from 22.7 percent in 2000, to less than 0.1 percent in 2003 (Table 7.21). However, the number of hooks reported set with no bait type specified increased from zero in 1999 – 2001 to 3.7 percent in 2003, declining to less than one percent in 2004. Nearly all of the hooks reported set in the Gulf of Mexico in the past two years have been set with dead bait. NMFS will continue to analyze the effectiveness of the live bait prohibition in the Gulf of Mexico pelagic longline fishery.

Table 7.21 Comparison of the number of hooks (thousands) reported set in the Gulf of Mexico with dead, artificial, or live bait, or a combination of baits, 1999-2008. Source: PLL Logbook data.

Bait Type	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Dead	2,336 (70.9)	2,598 (77.3)	3,176.5 (98.3)	3,494.6 (97.6)	3,668.7 (96.3)	4,089.0 (99.8)	2,878.9 (94.8)	2,368.2 (91.9)	2,908.5 (99.6)	2,359.9 (99.3)
Live	372 (11.3)	259 (7.7)	5,500.0 (0.2)	0.7 (<0.1)	1.5 (<0.1)	0 (0)	0 (0)	0 (0)	1.2 (<0.1)	0 (0)
Both (DL)	585 (17.8)	506 (15.0)	49.3 (1.5)	13.1 (0.4)	1 (<0.1)	0 (0)	0.9 (<0.1)	0 (0)	0 (0)	0 (0)
Artificial	-	-	-	-	-	-	0 (0)	8.7 (0.3)	0 (0)	3.2 (0.25)
Both (DA)	-	-	-	-	-	-	20.3 (0.7)	14.2 (0.6)	0.7 (<0.1)	6.95 (0.44)
Unknown	0 (0)	0 (0)	0 (0)	71.0 (2.0)	139.6 (3.6)	8.0 (0.2)	137.5 (4.5)	186.1 (7.2)	10.4 (0.4)	0 (0)
Total hooks	3,293	3,363	3,231.2	3,579.5	3,810.8	4,097.0	3,037.5	2,577.2	2,920.7	2,370.1

Numbers in parentheses are precent of the total number of hooks set in the Gulf of Mexico

7.7.2 Conclusion

The time/area closures and live bait prohibition in the Gulf of Mexico have been relatively successful at reducing bycatch in the HMS pelagic longline fishery. Reported discards of all species of billfish have declined (Table 7.20). The reported number of turtles caught, swordfish discarded, and pelagic and large coastal shark discards have also declined. However, the reported number of target species kept, such as swordfish and BAYS tuna have decreased more than was predicted. This is contrary to the other objective of the time/area closures, which was to minimize the reduction in target catch. NMFS will continue to analyze these measures as additional data become available and examine the effects of ongoing regulatory change over time.

7.8 Evaluation of Other Bycatch Reduction Measures

NMFS continues to monitor and evaluate bycatch in HMS fisheries through direct enumeration (pelagic and bottom longline observer programs, shark gillnet observer program), evaluation of management measures (closed areas, trip limits, gear modifications, etc.), and vessel monitoring systems (VMS).

Chapter 7 References

Babcock, E.A., E.K. Pikitch, and C.G. Hudson. 2003. How much observer coverage is enough to adequately estimate bycatch? Report of the Pew Institute for Ocean Science, Rosenstiel School of Marine and Atmospheric Science, University of Miami, Miami, FL. 36 pp. On-line version: http://www.oceana.org/uploads/BabcockPikitchGray2003FinalReport.pdf

Belle, S. 1997. Mortalities and healing processes associated with hook and line caught juvenile bluefin tuna and two different handling methods; control (untagged) and dart tagging. New England Aquarium Bluefin Tuna Project, Final Report NOAA Award No. NA27FL0199-01.

Beerkircher, L.R., C.J. Brown, and D.W. Lee. 2002. SEFSC Pelagic Observer Program Data Summary for 1992-2000. NOAA Tech. Mem. NMFS-SEFSC-486. 26 pp.

Burgess, G.H. and A. Morgan. 2004. Commercial shark fishery observer program; an observer program report on the monitoring of the directed commercial shark fishery in the eastern Gulf of Mexico and South Atlantic 2003(2) fishing season. Final report to Highly Migratory Species Division, National Marine Fisheries Service. Award No. NA03NMF4540075.

Carlson, J.K. and I.E. Baremore. 2002. The Directed Shark Gillnet Fishery: Non-Right Whale Season, 2002 (catch, bycatch and estimates of sample size). NMFS/SEFSC/SFD Contribution PCB-02/12. Panama City, FL. 10 p.

Carlson, J. K. and I. Baremore. 2003. The directed shark gillnet fishery: catch and bycatch, 2003. National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Southeast Fisheries Science Center, Panama City, FL. Sustainable Fisheries Division Contribution PCB-03/07. 8pp.

Carlson, J.K. and D.M Bethea. 2006. The Directed Shark Gillnet Fishery: Catch and Bycatch, 2005. NOAA, NMFS, Southeast Fisheries Science Center, Panama City, FL. Panama City Lab.-Contribution 06-01.

Cortés, E. 2005. Stock Assessment of Small Coastal Sharks in the U.S. Atlantic and Gulf of Mexico. NOAA, NMFS, Southeast Fisheries Science Center, Panama City, FL. SFD-02/03-177. 222 pp.

Cramer, J. 2000. Pelagic Longline Bycatch. SFD-99/00/115 (Rev), 35 p.

de Silva, J.A., R.E. Condrey, B.A. Thompson. 2001. Profile of Shark Bycatch in the U.S. Gulf Menhaden Fishery. North Amer. Jour. of Fish. Mgmt. 21:111-124.

Epperly, S., L. Stokes, and S. Dick. 2004. Careful Release Protocols for Sea Turtle Release with Minimal Injury. NOAA Tech. Mem. NMFS-SEFSC-524.

Garrison, L.P. 2005. Estimated Bycatch of Marine Mammals and Turtles in the U.S. Atlantic Pelagic Longline Fleet during 2004. NOAA Tech. Mem. NMFS-SEFSC-531.

Garrison, L.P., L. Stokes, and C. Fairchild. 2009. Estimated Bycatch of Marine Mammals and Sea Turtles in the U.S. Atlantic Pelagic Longline Fleet During 2008. NOAA Tech. Mem. NMFS-SEFSC-591.

Graves, John E., B.E. Luckhurst, E.D. Prince. 2002. An evaluation of pop-up satellite tags for estimating postrelease survival of blue marlin (*Makaira nigricans*) from a recreational fishery. Fish. Bull. 100(1):134-142 (2002).

Hale, L.F. and J.K. Carlson. 2007. Characterization of the Shark Bottom Longline Fishery: 2005-2006. National Oceanic and Atmospheric Administration Technical Memorandum. NMFS-SEFSC-554. 25pp.

Hale, L.F., L.D. Hollensead, and J. K. Carlson. 2007. Characterization of the shark bottom longline fishery: 2007. NOAA Technical Memorandum NMFS-SEFSC 564, 25p.

Horodysky, A.Z. and J.E. Graves. 2005. Application of pop-up satellite archival tag technology to estimate postrelease survival of white marlin (*Tetrapterus albidus*) caught on circle and straight-shank ("J") hooks in the western North Atlantic recreational fishery. Fish. Bull. 103(1):84-96.

Murawski, S.A. 2005. The New England groundfish resource: a history of population change in relation to harvesting. In: Buschbaum, R., Pederson, J., and Robinson, W.E., eds. The Decline of Fisheries Resources in New England: Evaluating the Impact of Overfishing, Contamination, and Habitat Degradation. Cambridge (MA): MIT Sea Grant Program, MITSG 05-5, p. 11-24.

NAS. 2006. Review of Recreational Fisheries Survey Methods. Committee on the Review of Recreational Fisheries Survey Methods, National Research Council. ISBN: 0-309-10193-X, 130 p.

NMFS. 1998. Managing the Nation's Bycatch: Programs, Activities, and Recommendations for the National Marine Fisheries Service. 174 pp.

NMFS. 1999. Final Fishery Management Plan for Atlantic Tunas, Swordfish and Sharks. NOAA, NMFS, HMS Management Division.

NMFS. 2000. Regulatory Amendment One to the 1999 HMS FMP. Reduction of Bycatch, Bycatch Mortality, and Incidental Catch in the Atlantic Pelagic Longline Fishery, June 14, 2000. NOAA, NMFS, HMS Management Division.

NMFS. 2002. Regulatory Adjustment 2 to the Atlantic Tunas, Swordfish, and Sharks Fishery Management Plan. NOAA, NMFS, Highly Migratory Species Management Division, 174 pp.

NMFS. 2003a. Final Amendment 1 to the Fishery Management Plan for Atlantic Tunas, Swordfish, and Sharks. NOAA, NMFS, HMS Management Division.

NMFS. 2003b. National Report of the United States: 2003. NAT/034. 40 pp.

NMFS. 2004a. Evaluating Bycatch: A National Approach to Standardized Bycatch Monitoring Programs. U.S. Dep. Commer., NOAA Tech. Memo. NMFS-F/SPO-66, 108 p.

NMFS. 2004c. FSEIS Reduction of Sea Turtle Bycatch and Bycatch Mortality in the Atlantic Pelagic Longline Fishery. NOAA, NMFS, HMS Management Division, Silver Spring, MD.

NMFS. 2005. Annual Report of the United States of America. ANN/2005/038.

NMFS. 2006. Final Consolidated Atlantic Highly Migratory Species Fishery Management Plan. NOAA, NMFS, Highly Migratory Species Management Division, 1315 East West Highway, Silver Spring, MD.

NMFS. 2007. Estimated Takes of Protected Species in the Commercial Directed Shark bottom Longline Fishery 2006. NMFS Southeast Fisheries Science Contribution PRBD 07/08-05. 15 p.

NMFS. 2008. Annual Report of the United States of America. ANN-043/2008.

NMFS. 2008. Stock Assessment and Fishery Evaluation (SAFE) Report For Atlantic Highly Migratory Species. Highly Migratory Species Management Division, 1315 East West Highway, Silver Spring, MD 20910. 446 pp.

Rago, P.J., S.E. Wigley, and M.J. Fogarty. 2005. NEFSC Bycatch Estimation Methodology: Allocation, Precision, and Accuracy. NOAA, NMFS, NEFSC Ref. Doc. 05-09.

Rester, J.K. and R.E. Condrey. 1999. Characterization and evaluation of bycatch reduction devices in the Gulf menhaden fishery. North Amer. Jour. Fish. Mgmt. 19: 42-50.

Richards, P.M. 2007a. Estimated takes of protected species in the commercial directed shark bottom longline fishery 2003, 2004, and 2005. SFD-06/07-08, 21 p.

Richards, P.M. 2007b. Estimated takes of protected species in the commercial directed shark bottom longline fishery 2006. PRBD-07/08-05, 15 p.

SEDAR 11. 2006. Stock Assessment Report: Large Coastal Shark Complex, Blacktip, and Sandbar Shark. NOAA/NMFS, Highly Migratory Species Management Division, 1315 East West Highway, Silver Spring, MD.

SEDAR 13. 2007. Stock Assessment Report: Small Coastal Shark Complex, Atlantic Sharpnose, Blacknose, Bonnethead, and Finetooth Shark. NOAA/NMFS, Highly Migratory Species Management Division, 1315 East West Highway, Silver Spring, MD.

Shah, A., J.W. Watson, D. Foster, and S. Epperly. 2004. Experiments in the Western Atlantic Northeast Distant Waters to Evaluate Sea Turtle Mitigation Measures in the Pelagic Longline Fishery – Summary of Statistical Analysis. NOAA, NMFS, SEFSC, Pascagoula, MS. Unpublished Report.

Skomal, G. and B. Chase. 1996. Preliminary results on the physiological effects of catch-and-release on bluefin tuna (*Thunnus thynnus*) caught off Cape Hatteras, North Carolina. ICCAT SCRS/96/126, 13 pp.

Smith, P.C., L.F. Hale, and J.K. Carlson. 2006. The Directed Shark Longline Fishery: Catch and Bycatch, 2005. NMFS Panama City Laboratory Contr. 06-04. 14 pp.

Walsh, C.F. and L.P. Garrison. 2006. Estimated Bycatch of Marine Mammals and Turtles in the U.S. Atlantic Pelagic Longline Fleet During 2005. NOAA Tech. Mem. NMFS-SEFSC-539.

Watson, J.W., D.G. Foster, S. Epperly, and A. Shah. 2003. Experiments in the Western Atlantic Northeast Distant Waters to Evaluate Sea Turtle Mitigation Measures in the Pelagic Longline Fishery – Summary of Statistical Analysis. NOAA, NMFS, SEFSC, Pascagoula, MS. Unpublished Report.

Watson, J.W., D.G. Foster, S. Epperly, and A. Shah. 2004. Experiments in the Western Atlantic Northeast Distant Waters to Evaluate Sea Turtle Mitigation Measures in the Pelagic Longline Fishery: Report on experiments conducted in 2001–2003. February 4, 2004. NOAA, NMFS, SEFSC, Pascagoula, MS. 123 pp.

Yeung, C. 2001. Estimates of marine mammal and marine turtle bycatch by the U.S. Atlantic pelagic longline fleet in 1999-2000. NOAA Tech. Mem. NMFS-SEFSC-467: 43 p.

8.0 HMS PERMITS AND TOURNAMENTS

This section provides updates for the number of permits that were issued in conjunction with HMS fishing activities as of October 2009. HMS fisheries permit numbers (Table 8.1 through Table 8.8), and dealer permit numbers for shark, swordfish, and tunas are updated through October 2009. Section 8.7, Atlantic HMS Tournaments, provides a comprehensive synthesis of recreational fishing tournaments and their role in the context of HMS management. These tables have been updated since the 2008 SAFE Report, which listed numbers of permits as of October 2008.

8.1 Limited Access Permits

The limited access permit program was implemented in the 1999 HMS Fishery Management plan for Atlantic tunas, sharks, and swordfish and became effective on July 1, 1999 (64 FR 29090, May 28, 1999). The program set up six different permit types for limited access provisions: Swordfish Directed, Swordfish Incidental, Swordfish Handgear, Shark Directed, Shark Incidental, and Atlantic Tuna Longline. To reduce bycatch concerns in the pelagic longline fishery, these permits were designed so that the Swordfish Directed and Incidental permits are valid only if the permit holder also holds both an Atlantic Tuna Longline and a shark permit. Similarly, the Atlantic Tuna Longline permit is valid only if the permit holder also holds both a swordfish (Directed or Incidental, not Handgear) and a shark permit. No additional limited access permits are required to make a Swordfish Handgear or any of the shark permits valid. The Atlantic Tuna Longline permit is now being issued from NMFS Southeast Regional Office Permits Branch to facilitate more efficient issuance of all limited access permits.

The initial permits were issued in May of 1999, and after successful application/appeals processes, 982 permit holders received limited access permits by October 2000. There was an increase in the number of permits issued between May 2008 and October 2009, from 1,079 to 1,107 (Table 8.1). There is no increase in the number of permits issued from year to year and the increase is possibly a result of seasonal fluxes influenced by the fishing season management period.

Table 8.1 Distribution of Shark, Swordfish, and Atlantic Tuna longline Limited Access Permits Between 2002 and 2009. Permit numbers as of October 2009.

State	# Directed Swordfish	# Incidental Swordfish	# Swordfish Handgear	# Directed Shark	# Incidental Shark	# Tuna Longline	# Permit Holders/# Permits
ME	1	-	1	1	1	1	3/5
NH	1	-	1	1	1	-	3/4
MA	13	2	11	5	14	16	33/61
RI	1	-	16	-	5	1	18/23
CT	1	-	1	1	2	1	4/6
NY	14	5	4	9	13	18	31/63
NJ	33	13	6	27	32	48	68/159
DE	1	-	-	-	1	3	3/5
MD	5	-	-	4	2	6	7/17
VA	1	2	-	2	2	4	6/11
NC	10	8	-	17	13	12	31/60
SC	3	1	-	4	12	3	17/23
GA	-	-	-	2	1	-	3/3
FL	71	34	40	140	139	100	332/524
AL	-	-	-	6	1	-	7/7
MS	-	-	-	-	4	-	4/4
LA	31	6	-	2	36	40	47/114
TX	-	3	1	2	6	5	12/17
CA	-	-	-	-	-	1	1/1
***Totals 2009**	**187**	**72**	**81**	**223**	**285**	**259**	**636/1107**
2008	**181**	**76**	**81**	**214**	**285**	**241**	**628/1079**
2007	**180**	**79**	**82**	**231**	**296**	**218**	**613/1086**
2006	**191**	**86**	**88**	**240**	**312**	**214**	**604/1131**
2005	**190**	**91**	**92**	**235**	**320**	**200**	**639/1128**
2004	**195**	**99**	**96**	**241**	**348**	**222**	**657/1201**
2003	**206**	**99**	**95**	**251**	**359**	**235**	**696/1245**
2002	**205**	**110**	**94**	**251**	**376**	**226**	**713/1262**

* Number of permit holders in each category, and state, is subject to change as permits are renewed or expire.

8.2 Atlantic Tunas Permits

The number of Atlantic tunas permit holders by category is listed in Table 8.2. The actuall number of 2009 permit holders in each category is subject to change as individuals renew or allow their permits to expire. The overall number of tuna permits considerably decreased in many categories between May 2008 and October 2009 (Table 8.2). The reason for this decrease has not been determined by the HMS Management Division at this time. The increase in Longline Category permits could be attributed to the elimination of the "sunset" provision for these permits as of August 4, 2008 (73 FR 38144, July 3, 2008). This rule allows the most recent shark and swordfish limited access permit holders on record to renew previously expired Longline permits as long as other requirements for renewal were met. Distributions for General Category permits can be found in Table 8.3. Trap Category permits (nine total) occur from North Carolina to Massachusetts. Harpoon Category permits (26 total) occur from mainly from Rhode Island north to Maine with the exception of one permit holder in North Carolina. Although there are five entities eligible to participate in the purse seine tuna fishery, recently two vessels were sold and only three Purse Seine Category permits were issued in 2009.

Table 8.2 Atlantic tuna permits by state as of October 2009

Category	2002	2003**	2004	2005	2006	2007	2008	2009
Longline	226	235	222	200	214	218	241	259
Angling *	13,263	18,804	20,245	24,127	25,238	24,220	26,933	25,506
Harpoon	56	47	49	40	40	26	26	23
Trap	6	2	2	7	7	9	9	4
General	6,431	5,526	5,057	4,494	4,824	3,616	4,031	3,824
Purse Seine	5	5	5	5	5	4	4	3
Atlantic HMS Charter/Headboat*	3,659	4,167	3,881	3,963	4,173	3,899	4,297	4,150
Total	**23,646**	**28,789**	**29,461**	**32,836**	**34,501**	**31,992**	**35,568**	**33,769**

* Atlantic HMS Angling and Charter/Headboat permit became effective March 1, 2003 (67 FR 77434, December 18, 2003) and includes all HMS, not just tunas.

Table 8.3 General Category permits by state as of October 2009

State	General Category permits	State	General Category permits
AL	26	NC	618
AR	1	ND	1
CO	1	NH	175
CT	90	NJ	247
DE	33	NY	208
FL	173	OR	1
GA	4	PA	1
IA	1	PR	93
LA	44	RI	187
MA	1257	SC	68
MD	35	TX	30
ME	429	VA	73
MI	2	VI	18
MS	6	WY	1
Total			**3,824**

8.3 Atlantic HMS Charter/Headboat Permits

In 2002, NMFS published a final rule (67 FR 77434, Dec. 18, 2002) expanding the HMS recreational permit from tuna only to include all HMS and defining HMS Charter/Headboat operations. This established a requirement that owners of charter boats or headboats that are used to fish for, take, retain, or possess Atlantic tunas, sharks, swordfish, or billfish must obtain a Atlantic HMS Charter/Headboats permit. This permit replaced the Atlantic Tunas Charter/Headboat permit. A vessel issued an Atlantic HMS Charter/Headboat permit for a fishing year will not be issued an HMS Angling permit or any Atlantic Tunas permit in any category for that same fishing year, even if there is a change in the vessel's ownership. The total number of Atlantic HMS Charter/Headboat permits decreased slightly between 2008 and 2009. The distribution of Atlantic HMS Charter/Headboat permits can be seen in Table 8.4.

Table 8.4 Atlantic HMS Charter/Headboat Permits by State as of October 2009.

State	Atlantic HMS Charter/Headboat	State	Atlantic HMS Charter/Headboat
AL	74	NJ	562
CT	87	NY	319
CO	1	OH	1

State	Atlantic HMS Charter/Headboat	State	Atlantic HMS Charter/Headboat
DE	95	OK	1
FL	682	PA	6
GA	26	PR	31
LA	81	RI	160
MA	728	SC	162
MD	161	SD	1
ME	110	TX	170
MI	3	VA	122
MN	2	VI	20
MS	26	VT	1
NC	462	WV	1
NH	55	**Total**	**4,150**

8.4 HMS Angling Permit

Effective March 2003 (67 FR 77434, Dec. 18, 2002), the HMS Angling Permit is required to fish for, retain, or possess, including catch and release fishing, any federally regulated HMS. Current number of permits and their distributions for the HMS Angling category are listed in Table 8.5. Species authorized for harvest with an HMS Angling permit include: sharks, swordfish, white and blue marlin, sailfish, spearfish, and federally regulated Atlantic tunas (bluefin, yellowfin, bigeye, skipjack, and albacore). Atlantic HMS caught, retained, possessed, or landed by persons on board vessels with an HMS Angling Category permit may not be sold or transferred to any person for a commercial purpose. By definition, recreational landings of Atlantic HMS are those that cannot be marketed through commercial channels, therefore it is not possible to monitor anglers' catches through ex-vessel transactions as in the commercial fishery. Instead, NMFS conducts statistical sampling surveys of the recreational fisheries. These survey programs have been used for over a decade and include the Marine recreational Fishing Statistics Survey (MRFSS) and the large pelagic survey (LPS). A vessel issued an HMS Angling Category permit for a fishing year will not be issued an HMS Charter/ Headboat permit or an Atlantic Tunas permit in any category for that same fishing year, regardless of any change in the vessel's ownership.

Table 8.5 Atlantic HMS Angling permits as of October 2009

State	Permits by Home Port*	Permits by Residence**	State	Permits by Home Port*	Permits by Residence**
AK	4	-	ND	2	1
AL	452	427	NE	-	4
AR	9	10	NH	392	462
AZ	-	2	NJ	3543	3001
CO	5	9	NM	1	1
CT	687	784	NV	7	8
DC*	-	8	NY	1785	1868
DE	970	608	OH	14	24
FL	4335	4055	OK	10	14
GA	147	226	OR	1	-
HI	1	-	PA	245	1275
IA	2	4	PR	736	768
IL	5	29	RI	692	513
IN	8	14	SC	908	872
KS	1	8	SD	1	5
KY	6	8	TN	22	45
LA	679	671	TX	801	825
MA	3802	3775	UT	-	1
MD	1308	1267	VA	1045	1126
ME	482	432	USVI	59	29
MI	20	25	VT	27	51
MN	3	10	WA	4	4
MO	4	9	WI	2	11
MS	30	271	WV	9	15
MT	-	1	WY	-	1
NC	2002	1896	Other	39	33
Total				**25,506**	**25,506**

*The home port is identified for the Atlantic HMS Angling permit are listed as the port where the vessel is stored submitted by the permit holder

**The residence identified for the Atlantic HMS Angling permit are listed as the bill to state submitted by the permit holder

8.5 Dealer Permits

Dealer permits are required for commercial receipt of Atlantic tuna, swordfish, and sharks, and are described in further detail in the 2006 Consolidated HMS FMP. Dealer permits are open access. An Atlantic shark dealer permit is required for any entity, person, or company that is the "first receiver" of any Atlantic shark or part of an Atlantic shark. A first receiver is any entity, person, or company that takes, for commercial purposes (other than solely for transport), immediate possession of the fish, or any part of the fish, as the fish are offloaded from a fishing vessel of the United States. Shark dealers, or a proxy for each location that first receives sharks, must attend and successfully complete an Atlantic Shark Identification Workshop, and be issued a certificate in order to obtain or renew their shark dealer permit. Also, trucks or other conveyances which are extensions of a shark dealer's place of business must possess a copy of a valid Atlantic Shark Identification Workshop Certificate. All permitted dealers are required to submit reports detailing the nature of their business. Swordfish and shark dealer permit holders must submit bi-weekly dealer reports on all HMS they purchase. Swordfish and shark dealer permit numbers and distributions are listed in Table 8.6. Tuna dealers must submit, within 24 hours of the receipt of a bluefin tuna, a landing report for each bluefin purchased from U.S. fishermen. Dealers must also submit bi-weekly reports that include additional information on tunas they purchase. To facilitate quota monitoring, "negative reports" for shark and swordfish are also required from dealers when no purchases are made (*i.e.*, NMFS can determine who has not purchased fish versus who has neglected to report). NMFS continues to automate and improve its permitting and dealer reporting systems and plans to make additional permit applications and renewals available online in the near future. Tuna dealer permit numbers and distributions can be found in Table 8.7.

Table 8.6 Number of domestic Atlantic shark and swordfish dealer permits by state issued in each between 2002 and 2009.

State/Country	Atlantic swordfish	Atlantic sharks	# of permits
AL	2	3	5
CA	6	1	7
FL	72	39	111
GA	1	1	2
HI	3	--	3
LA	8	6	14
MA	17	7	24
MD	3	3	6
ME	2	2	4
NC	14	5	19
NJ	11	10	21

State/Country	Atlantic swordfish	Atlantic sharks	# of permits
NY	11	4	15
RI	5	4	9
SC	13	15	28
TX	3	2	5
VA	5	4	9
WA	1	--	1
Totals 2009*	**177**	**106**	**283**
2008	**171**	**128**	**299**
2007	**269**	**206**	**475**
2006	**285**	**336**	**621**
2005	**294**	**228**	**522**
2004	**321**	**230**	**559**
2003	**319**	**254**	**573**
2002	**321**	**267**	**588**

*Permits for 2009 are as of October 2009. The actual number of permits per state may change as permit holders move or sell their businesses.

Table 8.7 Number of Atlantic tuna dealer permits by state as of October 2009.

State	Bluefin Only *	BAYS Only	Bluefin and BAYS	Total Atlantic Tunas Dealer Permits
CA	3	--	1	4
CT	--	1	2	3
DE	--	--	1	1
FL	1	1	12	14
GA	--	--	2	2
HI	--	--	4	4
LA	--	1	7	8
MA	8	4	77	89
MD	--	--	8	8
ME	11	1	7	19
NC	4	3	24	31
NH	--	--	5	5
NJ	--	7	42	49
NY	2	16	50	68
PA	1	--	--	1
PR	--	6	2	8
RI	1	5	24	30

State	Bluefin Only *	BAYS Only	Bluefin and BAYS	Total Atlantic Tunas Dealer Permits
SC	--	1	6	7
TX	--	2	--	2
VA	1	5	13	19
VI	--	2	1	3
WA	--	--	1	1
Total	**32**	**55**	**289**	**376**

*Does not include Pacific bluefin tuna dealer permits which were eliminated July 1, 2005.

8.6 Exempted Fishing Permits (EFPs), Display Permits, Letters of Acknowledgement (LOAs) Chartering Permits, and Scientific Research Permits (SRPs)

EFPs, display permits, LOAs and SRPs are issued under the authority of the Magnuson-Stevens Act (MSA) (16 U.S.C. 1801 et seq.) and/or Atlantic Tunas convention Act (ATCA) (16 U.S.C. 971 et seq.). EFPs are issued to individuals for the purpose of conducting research or other fishing activities using private (non-NOAA) vessels, whereas an SRP would be issued to agency scientists who are using NOAA vessels as their research platform. Similar to SRPs, LOAs are issued to individuals conducting research from "bona fide" research vessels on species that are only regulated by Magnuson-Stevens Act and not ATCA. NMFS does request research plans for these activities and indicates concurrence by issuing an LOA. Display permits are issued to individuals who are fishing for, catching, and then transporting HMS to certified aquariums for public display. Regulations at 50 CFR 600.745 and 50 CFR 635.32 govern scientific research activity, exempted fishing, and exempted educational activity with respect to Atlantic HMS. The 2003 Amendment 1 to the Atlantic Tunas, Swordfish, and Sharks FMP implemented and created a separate display permitting system, which operates apart from the exempted fishing activities that are focusing on scientific research. The application process for display permits is similar to that required for EFPs and SRPs. When NMFS implemented Amendment 2 to the 2006 Consolidated HMS FMP (73 FR 35788 June, 24 2008), the shark quota for EFPs, display permits, and SRPs remained the same. However, the quota for sandbar shark was reduced to 1.39 mt. authorized for display and 1.39 mt authorized for research under EFPs and SRPs.

Amendment 2 to the Consolidated HMS FMP also implemented a shark research fishery. This research fishery is conducted under the auspices of the exempted fishing program. Research fishery permit holders assist NMFS in collecting valuable shark life history data and data for future shark stock assessments. Fishermen must fill out an application for a shark research permit under the exempted fishing program to participate in the shark research fishery. In 2008, NMFS received 25 applications from 17 applicants. Of the 15 qualified applicants, 11 were chosen to participate in the shark research fishery. Shark research fishery participants are subject to 100 percent observer coverage in addition to other terms and conditions.

Issuance of EFPs, display permits, and SRPs may be necessary because possession of certain shark and billfish species are otherwise prohibited, possession of billfishes onboard commercial fishing vessels is prohibited, the commercial fisheries for bluefin tuna, swordfish and large coastal sharks may be closed for extended periods during which collection of live animals and/or biological samples would otherwise be prohibited, or for other reasons. These EFPs, SRPs, and display permits would authorize collections of tunas, swordfish, billfishes, and sharks from Federal waters in the Atlantic Ocean and Gulf of Mexico for the purposes of scientific data collection and public display. In addition, NMFS regulations at 50 CFR 635.32 regarding implantation or attachment of pop-up satellite archival tags in Atlantic HMS require prior authorization and a report on implantation activities.

In order to implement the chartering recommendations of the International Commission for the Conservation of Atlantic Tunas (ICCAT), NMFS published a rule on December 6, 2004 (69 FR 70396), requiring U.S. vessel owners with HMS permits to apply for and obtain a chartering permit before fishing under a chartering arrangement outside U.S. waters. These permits are issued in a manner similar to other EFPs. Under this final rule and consistent with the ICCAT recommendations, vessels issued a chartering permit are not authorized to use the quota or entitlement of the United States until the chartering permit expires or is terminated. This is because of the fact that under a chartering arrangement that U.S. vessels have attained authorization to harvest another ICCAT Contracting Parties' quota. Having a chartering permit does not obviate the need to obtain a fishing license, permits, or other authorizations issued by the chartering nation in order to fish in foreign waters, or obtain other authorizations such as a High Seas Fishing Compliance Act Permit, 50 CFR 300.10 et seq. A U.S. vessel shall not be authorized to fish under more than one chartering arrangement at the same time. NMFS will issue chartering permits only if it determines that the chartering arrangement is in conformance with ICCAT's conservation and management programs. Due to interest from the commercial industry, NMFS is currently considering changes to the vessel chartering regulations to potentially allow catches taken under a chartering arrangement to count against the Atlantic HMS quota.

The number of EFPs, display permits, and SRPs issued from 2005 – 2009 by category and species are listed in Table 8.8. Year-end reports for permits issued for 2009 are required, and are expected to be submitted to NMFS in early 2010.

Table 8.8 Number of Atlantic HMS Exempted Fishing Permits (EFPs), Display Permits, and Scientific Research Permits (SRPs) issued between 2002 and 2009.

Permit type		2005	2006	2007	2008	2009*
Exempted Fishing Permit	Sharks for display	6	7	6	5	4
	HMS for display	1	1	3	1	2
	Tunas for display	0	0	0	0	0
	Shark research on a non-scientific vessel	5	7	4	4	4
	Tuna research on a non-scientific vessel	7	5	4	4	4
	HMS research on a non-scientific vessel	3	4	9	7	5
	Billfish research on a non-scientific vessel	2	3	3	3	1
	Shark Fishing	0	0	0	0	0
	HMS Chartering	0	0	0	0	0
	Tuna Fishing	0	5	0	0	0
	TOTAL	**24**	**32**	**29**	**24**	**20**
Scientific Research Permit	Shark research	4	2	2	0	4
	Tuna research	0	0	1	0	0
	Billfish research	0	1	0	0	0
	HMS (multi-species) research	4	4	1	1	0
	TOTAL	**8**	**7**	**4**	**1**	**4**
Letters of Acknowledgement	Shark research	4	5	8	6	5
	TOTAL	**4**	**5**	**8**	**6**	**5**

Permit numbers for 2009 are as of October 1, 2009.

8.7 Atlantic HMS Tournaments

Fishing tournaments are an important component of HMS recreational fisheries. A tournament is defined in the HMS regulations as any fishing competition involving Atlantic HMS in which participants must register or otherwise enter or in which a prize or award is offered for catching or landing such fish. Since 1999, Federal regulations have required that each HMS tournament operator register their tournament with NMFS at least four weeks prior to the commencement of tournament fishing activities. Tournament operators may be selected for reporting and must submit tournament results to NMFS within seven days of the conclusion of the tournament.

Tournament registration and reporting is necessary because it provides an important source of information used to assess HMS fish stocks and to estimate the annual catch of Atlantic HMS. The information may be used by NMFS to plan for the assignment of tournament observers to assist in catch/effort data compilation and to obtain biological data and samples from landed fish (length/weight, stomach contents, injuries, parasites, hard and soft tissue samples for age determination, genetic and microconstituent analysis, spawning condition, fecundity, etc.). Additionally, with an accurate tournament database, NMFS may better assess the practicality of using tournaments for angler educational outreach efforts including distribution of written informational materials, notification of public hearings, and explanation of HMS regulations. HMS tournament registration and reporting information further allows NMFS, in the course of developing fishery management plans, to evaluate the social and economic impact of tournament angling in relation to other types of angling (*e.g.*, commercial, non-tournament recreational) and the relative effect of tournament angling on populations of various regulated HMS. Finally, the information is essential for the United States to meet its reporting obligations to ICCAT.

Generally, all billfish tournaments are selected for reporting to the Recreational Billfish Survey (RBS), because the information is critical to determine U.S. billfish landings for ICCAT compliance purposes. Tournament registration and reporting forms are available at: http://www.nmfs.noaa.gov/gpea_forms/forms.htm.

Tournaments may range from smaller club "member-only" events with as few as ten participating boats (40 – 60 anglers) to larger, statewide tournaments with 250 or more participating vessels (1,000 – 1,500 anglers). For the larger tournaments, corporate sponsorship from tackle manufacturers, marinas, boat dealers, marine suppliers, beverage distributors, resorts, radio stations, publications, chambers of commerce, restaurants, and other local businesses is often involved.

Many HMS fishing tournaments, particularly those that target billfish, promote strict conservation principles in their rules. For example, significant numbers of blue marlin, white marlin, and sailfish tournaments are "release-only," utilizing observers, angler affidavits, polygraph tests, photographs, or digital video camcorders to document the live release of billfish. Minimum sizes for fish that are allowed to be landed in many tournaments are often larger than state and Federal requirements. Also, since January 1, 2008, NMFS has required that anglers fishing from an HMS permitted vessel in any tournament awarding points or prizes for Atlantic billfish must deploy only non-offset circle hooks when using natural bait or natural bait/artificial lure combinations. Because fishing tournament participants are often well known and/or respected anglers, these conservation trends likely influence the general angling population in a positive manner.

Table 8.9 shows the number of registered HMS tournaments, by state, between 2003 and 2008. In 2008, 267 tournaments registered with the HMS Management Division and were conducted along the U.S. Atlantic coast, including the Gulf of Mexico and Caribbean. This is a decrease of 32 tournaments from 299 registered tournaments in 2007. The reason for the decrease is unknown, but anecdotal information from some

tournament operators indicated that high fuel cost and poor economic times may have been contributing factors. In 2008, most HMS fishing tournaments were conducted in Florida, Louisiana, Texas, New Jersey, Puerto Rico, North Carolina, South Carolina, New York, Maryland, Georgia, and Massachusetts. By far, the largest number of registered HMS tournaments has consistently occurred in the state of Florida.

Table 8.9 Number of registered Atlantic HMS tournaments by state (2003-2008). Source: NMFS Atlantic HMS Tournament Registration Database

STATE	2003	2004	2005	2006	2007	2008
ME	3	5	3	5	5	4
NH	0	0	0	0	0	0
MA	7	10	4	7	10	10
RI	3	3	2	2	2	2
CT	0	0	1	1	0	1
NY	14	14	10	12	13	13
NJ	18	17	16	19	17	20
DE	0	1	0	0	1	1
MD	14	14	14	13	11	13
VA	5	4	5	4	6	5
NC	15	16	18	17	17	16
SC	13	9	9	12	13	16
GA	12	3	13	11	11	10
FL	66	57	74	83	97	80
AL	9	8	7	8	10	8
MS	7	2	2	1	1	1
LA	20	22	26	20	24	24
TX	17	10	17	17	33	21
PR	13	17	22	19	20	19
USVI	6	1	10	7	7	2
Bahamas*	1	2	2	1	1	1
Bermuda*	0	0	1	0	0	0
Turks/Caicos*	1	0	0	0	0	0
TOTAL	**244**	**215**	**256**	**259**	**299**	**267**

*Some foreign tournaments voluntarily registered because the participants were mostly U.S. citizens.

Table 8.10 shows the number and percentage of HMS tournaments awarding points or prizes for a particular HMS based upon 2008 tournament registrations. Blue marlin, yellowfin tuna, sailfish, and white marlin are the predominant target species in HMS fishing tournaments. In 2008, the percentage of tournaments that awarded points or prizes decreased for all billfish species (except longbill spearfish), increased for swordfish, and decreased for small coastal sharks compared to 2007.

Table 8.10 Number and percent of 2008 Atlantic HMS tournaments awarding points or prizes by species (2007 values in parentheses). Source: NMFS Atlantic HMS Tournament Registration Database

Species	Number of Tournaments	Percent of tournaments
Blue Marlin	153 (201)	57% (67%)
Yellowfin Tuna	152 (168)	57% (56%)
Sailfish	148 (184)	55% (62%)
White Marlin	136 (186)	51% (62%)
Bluefin Tuna	90 (93)	34% (31%)
Swordfish	90 (83)	34% (28%)
Longbill Spearfish	78 (71)	29% (24%)
Pelagic Sharks	60 (59)	22% (20%)
Bigeye Tuna	56 (53)	21% (18%)
Albacore Tuna	28 (29)	10% (10%)
Skipjack Tuna	24 (21)	9% (7%)
Ridgeback Sharks	14 (11)	5% (4%)
Non-Ridgeback Sharks	10 (10)	4% (3%)
Small Coastal Sharks	7 (21)	3% (7%)

*Some foreign tournaments voluntarily registered because participants were mostly U.S. citizens.

Table 8.11, Table 8.12, and Table 8.13 show the percentage and number of 2008 HMS registered tournaments, by state (or country) for blue marlin, white marlin and sailfish, respectively. These tables indicate that Florida is the leading state in terms of numbers of registered billfish tournaments, especially for sailfish. Of note is the absence of Atlantic billfish tournaments in Georgia in 2008 due to billfish categories not being offered for a series of tournaments organized by a fishing club. Prior to 2008, that series of tournaments had billfish categories and Georgia ranked as the number 5 to 6 state with the most Atlantic billfish tournaments.

Table 8.11 Registered Atlantic Blue Marlin Tournaments in 2008. Source: NMFS Atlantic HMS Tournament Registration Database.

State	Number of 2008 Tournaments Awarding Points or Prizes for Blue Marlin	Percent of 2008 Tournaments Awarding Points or Prizes for Blue Marlin
Florida	36	24%
Texas	19	12%
Louisiana	19	12%
Puerto Rico	15	10%
North Carolina	13	8%
New Jersey	10	7%

State	Number of 2008 Tournaments Awarding Points or Prizes for Blue Marlin	Percent of 2008 Tournaments Awarding Points or Prizes for Blue Marlin
South Carolina	10	7%
Maryland	9	6%
Alabama	8	5%
Virginia	4	3%
Massachusetts	3	2%
U.S. Virgin Islands	2	1%
New York	1	1%
Bahamas*	1	1%
Rhode Island	1	1%
Delaware	1	1%
Mississippi	1	1%
Total	**153**	**100%**

*Some foreign tournaments voluntarily registered because the participants were mostly U.S. citizens.

Table 8.12 Registered Atlantic White Marlin Tournaments in 2008. Source: NMFS Atlantic HMS Tournament Registration Database.

State	Number of 2008 Tournaments Awarding Points or Prizes for White Marlin	Percent of 2008 Tournaments Awarding Points or Prizes for White Marlin
Florida	34	25%
Louisiana	19	14%
Texas	15	11%
North Carolina	13	10%
New Jersey	11	8%
South Carolina	10	7%
Maryland	9	7%
Alabama	8	6%
Virginia	4	3%
Massachusetts	3	2%
Puerto Rico	3	2%
U.S. Virgin Islands	2	1%
New York	1	1%
Bahamas*	1	1%
Rhode Island	1	1%
Delaware	1	1%
Mississippi	1	1%
Total	**136**	**100%**

*Some foreign tournaments voluntarily registered because the participants were mostly U.S. citizens.

Table 8.13 Registered Atlantic Sailfish Tournaments in 2008. Source: NMFS Atlantic HMS Tournament Registration Database.

State	Number of 2008 Tournaments Awarding Points or Prizes for Sailfish	Percent of 2008 Tournaments Awarding Points or Prizes for Sailfish
Florida	59	40%
Louisiana	19	13%
Texas	16	11%
North Carolina	13	9%
South Carolina	10	7%
Maryland	9	6%
Alabama	8	5%
Puerto Rico	5	3%
Virginia	4	3%
U.S. Virgin Islands	2	1%
Bahamas*	1	1%
Mississippi	1	1%
New Jersey	1	1%
Total	**148**	**100%**

*Some foreign tournaments voluntarily registered because the participants were mostly U.S. citizens.